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## SEATTLE WATER WORKS IMPROVEMENTS

Increasing Amount of Supply from Watershed—Reducing Danger of Shortage Due to Possible Break in Pipe Line by Increasing Storage—Relative Reliability and Cost of Wood Stave and Steel Pipe.

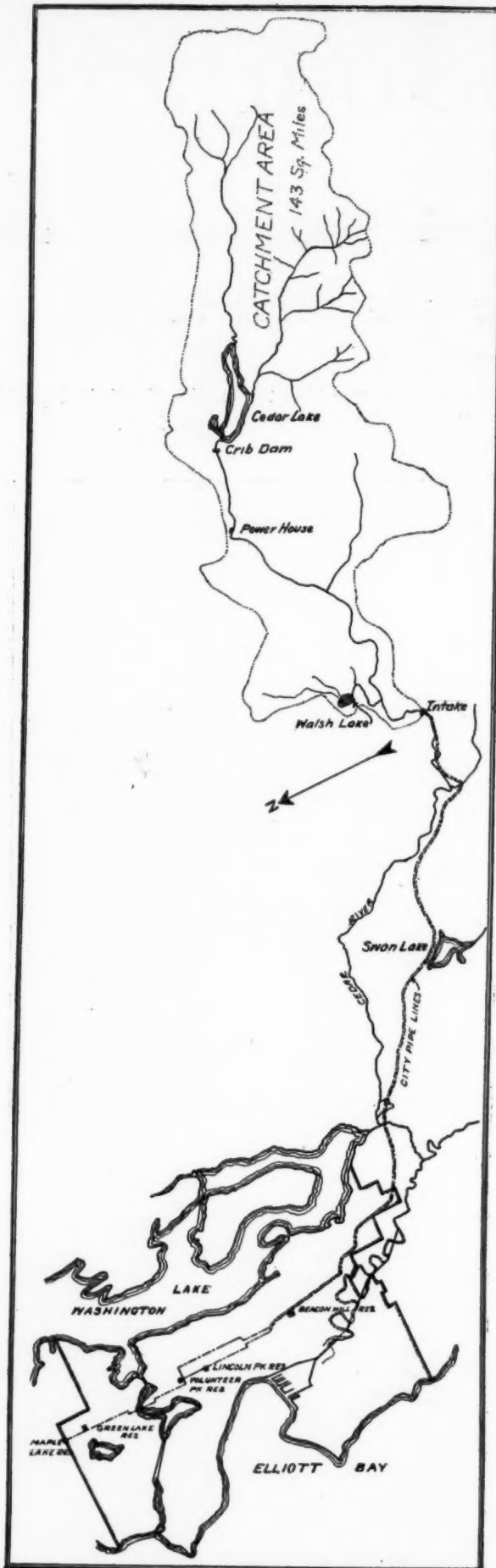


WOOD-STAVE PIPE LINES NO. 1 (ON THE LEFT) AND NO. 2 (ON THE RIGHT).  
At location of break referred to as the third break.

Due largely to the rapid growth of Seattle, Wash., the city officials have for some time been realizing that it would very soon be necessary to increase the capacity of several features of the municipal water supply in order to provide for increased consumption and also to lessen the danger of interruption of service. According to the 1910 census the population of the city was 237,194, and it is estimated that at present the population is about 300,000, and that it will probably reach 420,000 by 1926. During the time of maximum summer consumption of water this reaches 42,000,000 gallons per day, or 140 gallons per capita.

The city secures its supply from the Cedar river, which flows to an outlet into Elliott bay on the west side of the city from a water-shed southeast of the city; the intake being about 17 miles from the city limits. The water-shed above this point includes about 145 square miles. At the intake a diverting weir has been thrown across the stream, and from this two lines of

wood-stave pipe bring the water to reservoirs within the city. The first of these pipe lines was completed in 1901, the first half-mile being 54 inches in diameter and leading to a screening chamber. From this point a 44-inch pipe is carried for about 10 miles, and from here on it is 42 inches in diameter. The total length of the line, which is more or less winding because of the topography, is 28 miles from the screening chamber to Volunteer Park reservoir in the center of the city. All of this line is of wood-stave pipe with steel bands, except three short sections of 42-inch pipe at river and canyon crossings. In 1909 a second pipe line was built parallel to the first and about 10 feet west of it, leading from the intake to the southern part of the city, where it takes a somewhat different route and leads to another reservoir on the northern boundary of the city. This second line is 54 inches in diameter for the first half mile, 60 inches for the next 10 miles and 51½ inches for 14 miles, where it terminates at Beacon Hill reser-



MAP SHOWING CATCHMENT AREA AND PIPE LINE, SEATTLE WATER WORKS.



SECTION REBUILT AT SECOND BREAK.  
Standpipe in background.

voir, between which and Volunteer Park reservoir, 14 miles, it is 48 inches, and from here for 5 miles to Maple Leaf reservoir it is 42 inches.

The distribution system is divided into three separate zones, the lowest comprising that portion of the city lying below elevation 225, the intermediate part that between elevations 225 and 325, and the high service comprising those portions lying above 325. The low service is fed by three reservoirs with a combined capacity of 183,000,000 gallons; the intermediate service by two reservoirs with a capacity of 83,000,000 gallons, and the high service is fed from stand pipes which are supplied with water by pumping from the intermediate or low service reservoirs. The high service area is comparatively small.

While the low service consumption is greater than that of the intermediate service it is not twice as great, while it is seen by the above that the reservoir capacity for the low service is more than twice that of the intermediate. This lack of proportion in reservoir service was strikingly demonstrated last January, when part of the supply was interrupted by a break in pipe line No. 2, when all parts of the city except the intermediate service were sufficiently supplied with water until the repairs could be made.

Pipe line No. 1 will deliver about 21,000,000 gallons per day and pipe line No. 2 about 42,000,000 gallons, or a combined delivery sufficient to furnish 150 gallons per day to 420,000 population. If both pipe lines could be relied upon for continuous service, it would be unnecessary to provide additional carrying capacity until the city has reached this population, which would probably be in about 10 years. The break in line No. 2 already referred to, however, convinced the city officials that an additional conduit should be made available as soon as possible to provide for possible accidents to one of the lines. Consequently the council last spring requested city engineer A. H. Dimock and superintendent of waterworks L. B. Youngs to make and report to it an estimate of the cost of constructing a concrete aqueduct or a steel pipe line connecting the city with its source of water supply, with the idea of adopting the best method of bringing water into the city and avoiding a repetition of last winter's shortage of supply. The report of these officials was made under date of June 15 and the general facts and recommendations of the report are abstracted below.

On January 7th of this year a leak appeared about four miles from the intake at Cedar river. When this had been repaired and water admitted to the line a second leak was discovered more serious than the first, which washed out the hillside under the pipe at this point so that the pipe for a length of about 100 feet



hung suspended and was more or less damaged thereby. When this point had been repaired and the water again had been admitted, leaking at a third point caused another washout; and after this still a fourth one was found, of minor importance. The total length of pipe repaired was about 180 feet. These several repairs, during which the water had to be withdrawn from the pipe line, kept it out of commission for about a week, during which time laundries, hydraulic elevators and other large consumers were forced to suspend operations.

There have been two opinions expressed as to whether or not the condition of the wood staves was the cause, one investigator stating that there were very few points where any decay could be found, and that here it extended only about 3/16 of an inch, while another gave as his opinion that more or less decaying of the wood had been at least a contributing cause of the collapse, one reason advanced for this conclusion being that the collapses had occurred where the head was very light and the soil for a large part gravelly, and where consequently the staves were not kept thoroughly impregnated with water by pressure from within and were dried out by the presence of air in the porous gravel. There seems to be no question, however, that the immediate cause of the three last collapses was vacuum produced at these points in the pipe by the drawing off of the water to permit repairing the several previous leaks, coincident with the freezing of the air inlets or so-called stand-pipes, which freezing prevented the air from entering the pipe as the water was drawn off. The necessity for having the air pipes open was apparently realized, for fires were built around several of these stand-pipes to thaw them out; whether or not it did finally free them of ice, at least the fires burned the protecting cover of wood staves and the sawdust between these and the pipes, as may be seen in one or two of the photographs.

Messrs. Dimock and Youngs apparently felt that a steel pipe would be less liable than wood-stave to acci-

dents of this kind and would have a longer life, and recommended that as soon as possible steel be substituted for both of these lines and be used for the third line which is recommended. (Cast iron they apparently think would have still longer life, but the cost would be prohibitive in view of the very considerable distances over which it would have to be hauled through mountainous country poorly supplied with roads.) "It is probable," say they, "that the life of a good steel pipe will not exceed 50 years, or not more than four times the life of wood-stave pipe as at present built. The Bureau of Industrial Research of the University of Washington is about to experiment on the effect on the quality of the water of using creosoted staves in building wood pipe. If the use of creosoted staves be possible and if heavier banding be used and greater attention be paid to details of construction, the life of wood-stave pipe may possibly be doubled. In such a case it would become a formidable competitor of steel pipe because of this increased durability, and of course because of its much greater economy. A wood pipe may be constructed of ample strength to meet all the demands placed upon it. As time goes on, however, the wood begins to decay. Some staves decay more rapidly than others under similar conditions as to pressure, due either to imperfections in the wood itself or to the character of the earth fill against the staves." Even the most rigid inspection seems inadequate to prevent an occasional stave of poor wood getting into the pipe, and if this gives way there is a sudden outburst of water, which may wash away the supporting ground and cause a disastrous break, as happened last winter. When the pipe is buried, and especially if in gravel or other porous soil, it is impossible to detect such leaks until they reach considerable magnitude. It is realized that the length of life of wood-stave pipe is about 12 years, but few have the courage to ruthlessly throw away the remaining 90 per cent of good pipe because 10 per cent of it may have developed leaks, and unless this is done the pipe in 10 or 15 years becomes a source of much trouble and anxiety.

The writers of this report did not confine themselves to recommending a third line leading from the intake to the city and built of steel, together with the substitution of steel for the existing wood stave pipes; but also recommended a plan which they believed would greatly improve the service at less cost, which involved the construction of additional reservoirs. The chief argument for the latter plan was the long line of pipe between the city and the intake, a break in any part of which length would throw the broken line entirely out of commission. "After all the precautions which can reasonably be demanded have been taken in the construction of the supply pipes, there still remains the possibility of serious interruption to the service (due to breaks in such lines). There is, therefore, absolutely no question that the greatest possible degree of security against water shortage is obtained by constructing ample storage reservoirs in different parts of the city." In addition to these reservoirs they recommend the development of a lake called Swan Lake, past which the pipe lines now pass, as a storage reservoir of large capacity. The other features of the improvements proposed by them consist of a concrete aqueduct from the intake to this Swan Lake reservoir; a concrete aqueduct from this reservoir for about 2½ miles toward the city, or a tunnel leading to the same point; and the construction, as they may be needed, of two additional pipe lines from the end of this latter aqueduct or tunnel to the city reservoirs. Also the reconstruction, when it may be necessary, of the two existing pipe lines be-



**THREE-INCH STANDPIPE JUST EAST OF THIRD BREAK.**  
This was enclosed in a wooden box 8 ins. square on the outside, filled with sawdust; which box was destroyed by fire built to thaw out standpipe.

tween Swan Lake reservoir and the city reservoirs, and of additional reservoirs within or near the city limits; also such additional pipe lines as may be necessary to complete the main distribution service. It is not proposed that all of this work should be done at once, but 5 or 10 years will probably be required for its completion. Their estimates show that this plan would be far cheaper than carrying new pipe lines all the way from the city to the intake without the use of the proposed Swan Lake reservoir.

Advantages of this reservoir are that it would add about 3,000 acres (the drainage area of Swan Lake) to the catchment area of the water supply, since this lake is outside of the present catchment area; it would reduce the length of pipe lines to the city by one-third, thus reducing the hazard of interruption to the supply, the reservoir holding sufficient water to carry the city for a considerable time in case of a break between it and the intake. It would delay the time when a more permanent pipe line would be necessary between the intake and Swan Lake; would provide storage which would increase the safety of the water from a sanitary standpoint and permit the discontinuance of use of water from Cedar river during any time when local pollution in the river was feared; and would provide a settling basin which could remove all objectionable turbidity from the water supply during times of high water in the river. This lake lies below the hydraulic gradient of the existing lines and therefore such lines would deliver more water to this lake than they now delivered to the city; while on the other hand the existing lines between the lake and the city would deliver less than at present, or about 52,000,000 gallons per day, instead of 63,000,000. For this reason it would be necessary to construct a third pipe line between Swan lake and the city at the same time the Swan lake reservoir is constructed. It is planned to give this line a capacity of 50,000,000 gallons per day, or a total combined capacity for the three lines of 102,000,000 gallons.

As already stated, there is need for an increase of the capacity of the intermediate service reservoirs, and the proposed plan provided for a reservoir with 59,000,000 gallons capacity; also enlarging one of the existing reservoirs, adding 23,000,000 gallons to its capacity, and

constructing two new reservoirs in the western part of the city. With all of these completed, there would be storage capacity within the city limits of 490,000,000 gallons, which would supply the present population for 12 days of normal summer consumption or 24 days in winter.

The estimated cost of the pipe lines laid to the city and the development of Swan lake into a reservoir is \$6,405,000; of enlarging the reservoirs in the city limits, \$743,000, and of additions to the distribution system, \$1,034,000; a total of \$8,182,000. This estimate includes replacing the existing wood-stave pipe lines with steel. If these are to be replaced with wood-stave, the total cost would be reduced to \$7,178,000. This would provide for developing a supply of 150,000,000 gallons per day, estimated to be sufficient for a population of 1,000,000. It is not supposed that the complete project would be built at once. About \$4,205,000, however, should be authorized at once and spent within the next three to five years; this including the acquisition and improvement of Swan lake, the construction of pipe line No. 3 and two new reservoirs within the city limits.

## GRAND RAPIDS BUDGET SYSTEM

City's Activities Classified Under Twenty-Nine Departments—The Detailed Budget Ledger—Weekly Checks on Budget Balances.

By CHESTER W. SHAFER.

George P. Tilma, city comptroller at Grand Rapids, Michigan, has devised and installed a budget system, which, although designed primarily in the interest of simplicity, makes possible a degree of efficiency in every department of the city government hitherto undeveloped. Under the system it is impossible to exceed an appropriation without previous notice and sanction by the authorities, and all appropriations are made only after an intelligent and exhaustive survey of the records kept by the Board of Estimates and the Common Council. An absolute check on all departments is created and any "leakage" can be discovered with little effort. Above all the old "lump" plan of budgets is shown to be foolhardy and exceedingly unprofitable.

It is possible for the head of any department to ascertain, at the end of every week, just where he stands on



PIPE LINE NO. 1 AT LOCATION OF SECOND BREAK.  
Line No. 2 (also on a trestle) is between No. 1 and the hill.



STANDPIPE WITH HOLE CUT IN JACKET FOR THAWING.



expenditures in relation to his budget allowance and, because of the simplicity of the plan, it is equally possible for any private citizen with an ordinary degree of intelligence to examine the books and get first-hand information on any department. All "red tape" is done away with and the entire city government is placed open to examination. Besides all this, the system offers comparisons which promote a friendly rivalry among heads of departments, not only to keep within certain lines established in former years by themselves, but, in instances of change, to better the marks set by their predecessors. This feature alone provides for a great increase in efficiency.

In putting his plan into effect it was necessary for Tilma, at the start, to departmentize the city. In Grand Rapids this required the establishment of 29 departments, with certain sub-divisions, which follow:

- (1) Mayor's Department.
- (2) City Hall Department.
- (3) City Clerk's Department.
- (4) Common Council's Department.
- (5) Comptroller's Department.
- (6) Treasurer's Department.
- (7) Legal Department.
- (8) Building Inspector's Department.
- (9) Assessor's Department.
- (10) General Miscellaneous Department.
- (11) Miscellaneous Contingent Department.
- (12) Board of Works Department.—(a) Water, (b) engineers, (c) sidewalks and poles, (d) smoke, (e) office, (f) light, (g) road roller, (h) street repair, (i) bridges, (j) street signs, (k) flood maintenance, (l) conduits, (m) sewer districts, (n) ward highways.
- (13) Police Department.
- (14) Fire Department.
- (15) Health Department.
- (16) Hospital Department.
- (17) Municipal Court.
- (18) Superior Court.
- (19) Justice Courts.
- (20) Plumbing Inspector's Department.
- (21) Milk and Meat Inspector's Department.
- (22) Garbage Department.
- (23) Poor Department.
- (24) City Physician's Department.
- (25) Library Department.
- (26) Museum Department.
- (27) Park Department.—(a) Playgrounds, (b) swimming pools, (c) tree protection.
- (28) Cemetery Department.
- (29) Market Department.

These were the natural large divisions, and under each one such minor subdivisions were made as were needed. It was then necessary to make a uniform distribution of all expenses, down to the minutest detail, locating each unit in a division which was a natural environment for it. In this distribution three features were considered—operation, maintenance and permanent improvements. With these three heads to work under, the distribution of the expenses was made uniform.

As an illustration, the water department is taken. Under this head appears the following subdivisions: Salaries, office supplies, books, blanks, postage, telephone, laundry, car fare, fuel, refunds, garage and stables, tools, oil, wipers and waste, packing, janitor's supplies, chemicals, service connections, laboratory supplies, general supplies, injuries, furniture and fixtures, repairs, permanent improvements, and miscellaneous.

Under each of these subdivisions another division was made, which goes to show the details of the system. As an example, the subdivision "repairs" is taken. Under this appears the headings—buildings, grounds, engines and new parts, boilers and new parts, belt laces, meters, hydrants and mains, reservoir, stand pipes, filtration, lighting, sewers, water service, tools, harness, general re-

pairs, switchboard connections, furniture and fixtures, automobiles, wagons and miscellaneous.

The real important unit of the system was then provided, a large loose leaf ledger, known as the detailed budget ledger. To each department was assigned a number of pages, and at the heads of various columns were placed the various first subdivisions. On other pages at the head of columns were placed the second subdivisions. On the first page occupied by each department was written the amount of the previous year's budget.

The heads of the department are all provided with regulation blanks on which they note all expenditures, with details of each one. These slips are turned in at the office of the comptroller at the end of every week. Clerks, opening the ledger to the pages assigned to the department in question, note the total of expense under the main subdivisions. Then, turning to the second subdivisions, each separate item of expense is noted under the proper heads. The reports are then indexed and filed.

At the end of each week the totals of every subdivision are set down in red ink and at the same time the totals of these first totals are set down. For instance: in February the expenses of the water department were: Week ending Feb. 2, \$1,495.23; Feb. 9, \$12,999.40; Feb. 16, \$6,036.96; Feb. 23, \$2,627.51. This gave a total for the month of \$23,159.10. A total of \$310,021.45 appeared for the previous months of the fiscal year and this added to the February expense gave a total of \$333,180.55 for all. Thus it is possible at any time to refer to the ledger and ascertain in a moment just what each department had expended up to the time of examination.

Totals are obtained for each first and second subdivision in the same manner so that, on question, the amount expended at the time of examination is plainly shown. If any question arises regarding, for instance, the repairs in the water department, a glance at the totals of the first subdivision answers the question. Then, if a question regarding the items of the improvements is raised, an examination of the second subdivisions will answer it. Possibly further information is demanded and in this case the clerk refers to the records given him by the head of the department and there, in plain figures, are the details of every expense item.

The great advantage of the system comes at the end of the year, just before the budgets for the ensuing year are made. Heretofore, at this time, the heads of the departments gave a few details and then requested a "lump" sum. The council, with no information at hand to question the requests, simply deducted amounts which, in its judgment, might be excessive, and then allowed the request. Now budget form sheets are provided for each department. Space is provided at the left for all the main divisions and the subdivisions, and the sheet is then divided into four columns, the first for the expenditures of the preceding year, the second for the amount requested for the ensuing year, the third for the amount recommended by the board of estimates, and the fourth for the amount allowed by the council.

The clerks of the department secure the figures for the preceding year for each division from the comptroller and these totals are placed in the first column. The requests for the ensuing year are set down in the next column and the sheets are turned over to the Board of Estimates. These officials are able then to scan every item of expense of every department and decide intelligently as to whether the request for the budget is reasonable. They are also supplied by the heads of the departments with an inventory of all materials on hand, and these are taken into consideration at budget time. If,

for instance, office supplies of the city hall department show a total expense for the preceding year of \$880, and under the subdivision of pencils a request for \$50 is made, and the inventory shows enough pencils on hand to last six months, the request is declared exorbitant and denied. On another hand, if the inventory shows that the supply is low and the item of \$50 is still considered exorbitant, an investigation would show, if such was the case, that the excessive use of pencils was due to the carelessness or malicious acts of a clerk. Thus it would be possible to trace down any leak.

As another example, of a more pretentious character, the request of the water department might be deemed unreasonable in that the total for the repair items appeared excessive. Tracing through the subdivisions it might be found that the repairs to the filtration plant showed a large total. By referring back to the budget ledger and the reports of the head of the water department it could be quickly ascertained why this amount was large. If discrepancies in the reports were discovered the "leak" would be quickly detected. In the same way all items can be inspected easily.

After the Board of Estimates has intelligently passed on all items on the budget sheets, they are turned over

to the Common Council for further consideration. When the council has passed on them they are placed on file, where they may be examined at any time by an official or a private citizen.

It can readily be seen that the system is simplicity itself. The head of a department is able to tell at a glance, any time during the year, just where he stands with reference to his appropriations, and the private citizen is able to look up the official's record with equal ease. If a request is received during the year for an additional amount for some item, it is not honored until the reason for exceeding the appropriation is explained. With this check it is impossible for the department head to "slip anything over." Provisions are made, of course, for contingencies, such as flood, fire or any other element of expense which cannot be foreseen.

It was necessary for Tilma, on installing his system, to go back over the records for several years in order to secure figures for the first budget sheets. This done, the system worked perfectly and after another year it is expected to prove one of the most valuable assets of Grand Rapids. Should any other city desire to adopt this system, detailed instructions for an installation would be furnished on application.

## PRACTICAL STREET CONSTRUCTION--INTERSECTION GRADES

### Calculating an Extreme Case of Heavy Grades at an Oblique Intersection—Effect of Vertical Curves on Elevations—Intersections of Streets of Minor Importance—Temporary Sidewalk Construction.

The drawing Fig. 4 illustrates an extreme case, in which an acute angle is combined with a rising grade up one street and a falling grade down the other. As this is recognized as an extreme case, limiting deviations from the standard are used at the outset. Corners 2 and 4 are the most difficult ones, the latter especially so because of the steep grade—10 per cent.

To begin with, the elevation of  $I$  is taken as 101.44 and each street center line is reduced to 3 per cent grade between intersecting curb lines. Each roadway is given a continuous cross slope of 4 per cent from upper to lower curb. This gives  $s_4 = 103.69$ , and  $S_4$  is made the same.\*  $e = 100.68 - (10 \text{ per cent of } 47) = 95.98$ ; the gutter at  $s'_4$  becomes 96.70; curb 97.10, and 10 per cent sidewalk slope gives  $S_4 = 98.30$ , or 5.39 ft. lower than its elevation as calculated from  $s_4$ . Apparently some radical solution is necessary. We may introduce steps in the sidewalk leading down from the line  $S_4 s_4$ , giving  $s'_4$  elevation 103.3 at the top of the steps (as in the illustration). Or the curb at  $s'_4$  may be made 103.3, with a face 6.6 ft. high above the gutter—a retaining wall—and a sloping sidewalk be substituted for the steps, falling gradually to street level by using a grade of say 15 per cent. Or the street  $be$  may be carried level from  $I$  to  $e$ , making  $e = 101.44$ ; making the curb 10 in. high, making  $s'_4 = 102.99$ ; and giving the sidewalk  $S s'_4$  a 6 per cent slope. This, however, involves raising the roadway 5.46 feet at  $e$  and the lower sidewalk opposite it by the same amount, and thus not only requires considerable filling but increases the already steep grade down from  $e$ . Another possibility is flattening the grade from  $e$  toward  $I$ , and increasing the 3 per cent grade across the intersecting roadway to 4 per cent; also reducing the grade from  $d$  to  $a$  to 2 per cent, which of course requires

somewhat increasing the 4 per cent grade to the left from  $a$ , and increasing the grade above  $b$ . Which of these expedients (or what combination of them) is best for this case would have to be decided by local conditions, such as relative importance of roadway and sidewalk traffic; effect the plan would have upon availability and cost of grading of the several corner lots, etc.

At corner No. 2 the problem can be solved by using the limiting grades and slopes without recourse to unusual construction. Making the gutter opposite  $b$  104.31, and the curb 4 inches higher and the sidewalk level, gives  $S_2$  104.64; while the maximum rise from  $d$  would be .72 for roadway, .83 for curb and 1.20 for sidewalk, or 2.75; giving  $S_2$  101.55, or 3.09 lower than the other elevation for the same point. But if we carry the 3 per cent grade from  $I$  to  $b$ , this makes the latter 103.62, a reduction of 1.41 feet. If the 3 per cent grade be continued from  $I$  to  $d$ , this makes  $d$  .47 foot higher, bringing the total gain to 1.88 feet. The remaining 1.21 feet could be added to the curb height, making this 2.04, the curb being built as three or four steps at this point.

For an extreme condition like the above, none of the solutions suggested is more than a makeshift. If the grades are being adjusted throughout or can be changed without too great expense, a more satisfactory solution is to reduce the center line grades between  $a$  and  $d$ , and between  $b$  and  $e$ , to 2 per cent. Then  $e = 99.99$  and  $a = 102.89$ ;  $s_4 = 102.49$  and  $S_4 = 102.49$ . From  $e$ ,  $s'_4 = 101.11$  and  $S = 102.32$ . The difference in these values of  $S$  (0.17) can easily be adjusted by making the curb at  $s'_4$  0.57 ft. high instead of 0.4 high. Had the crossing been a right angle one, a 3 per cent grade for the building line platform would have served.

As stated, some of the elevations given above are to be modified by connecting the grades with vertical

\*For meaning of letters, see previous articles.



curves. A simple calculation, based on the principles of the parabola, shows that the curve at the intersection of the grade lines would be higher or lower than such intersection by an amount equal to  $.25 l (g - g')$ , in which  $l$  is the distance from vertex (intersection of grade lines) to P. C. or P. T., and  $g$  and  $g'$  are the two grades expressed as per cent. For example, if a 3 per cent and 6 per cent grade meet at a property line, and  $l$  is taken as the width of the sidewalk, say 12 feet, then the curve at the vertex is raised or lowered from the vertex .09 foot. If  $l$  is taken as 100 feet (which is preferable if conditions permit), the vertex elevation is changed .75 foot. If one of the grades is rising and the other falling, one  $g$  is called minus and the grade percentages are really added. For example, if a rising 3 per cent grade changes to a falling 6 per cent, the elevation of the connecting curve above or below the vertex would be 2.25 feet, if  $l$  is taken as 100 feet.

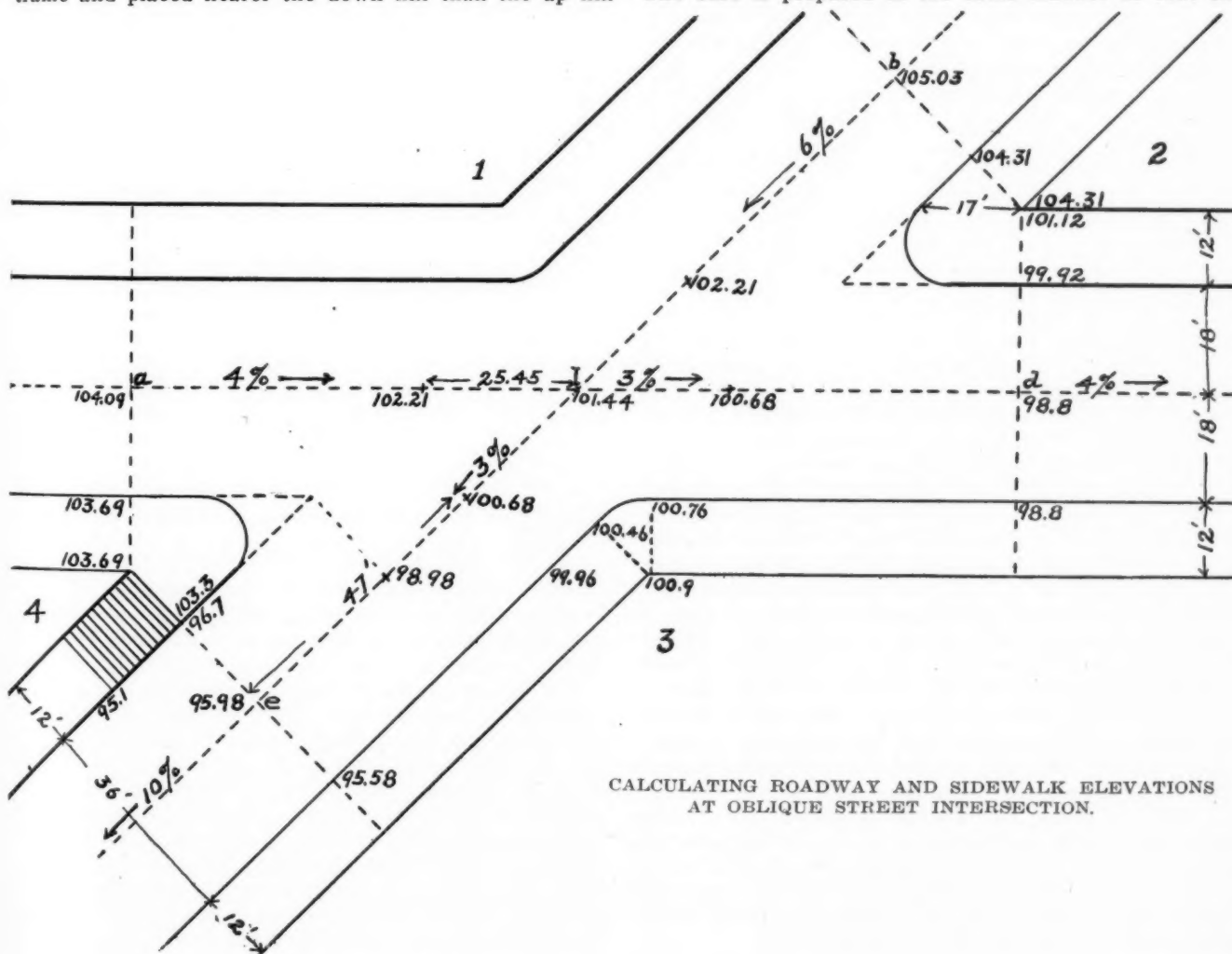
In all of these calculations it is assumed that the streets are being designed for business purposes or thorofares, with the sidewalks paved out to the curbs and the curb heights kept at a minimum. If, however, they are in a section which will always or for many years be purely residential, then the sidewalks can be raised almost any distance above the roadways, and connected with them by terraces or retaining walls, as described heretofore. In such cases the roadway should be crowned symmetrically with reference to the center line, the two gutters being given the same elevation. The lower curb would probably be made a minimum (say 4 inches) to reduce cost of grading. The roadway could be kept at the minimum width which will accommodate traffic and placed nearer the down hill than the up hill

property line, thus reducing grading and giving a wider space for terracing along the upper sidewalk. The roadways at intersections would follow the principles stated. The more important one would run across without any break except that the up-hill side would run level from the crown along the crown of the less important intersecting street and that its grade, if it exceeded 3 per cent, would drop to 3 per cent across the intersection. If the roadways are equally unimportant as traffic carriers, each would drop to a grade not exceeding 3 per cent at the crossing—both might run level between curb lines. The sidewalk pavements would all be given the most desirable cross-slope—say 2 per cent, and steps or inclines provided at the corners if necessary, as previously described.

But if there is any chance that the streets will at any future time become business streets or thorofares for foot traffic, then the calculation of grades and elevations should be made after some such manner as that described in these last three installments, and such grades and elevations adopted as official. The roadways should be graded and paved in accordance with these official grades; but the sidewalks can be graded and built temporarily to fit the ground more readily, as just described; it being understood that, whenever it may become necessary, the city can order the owners to rebuild them in accordance with the official grades and elevations.

#### NON-SLIP PAVEMENT IN SAN FRANCISCO.

A street with a rough surface to prevent skidding in wet weather has been laid in San Francisco, Cal. The base is prepared in the same manner as that em-



CALCULATING ROADWAY AND SIDEWALK ELEVATIONS  
AT OBLIQUE STREET INTERSECTION.

ployed in laying an asphalt street. Hot asphalt mixture of the desired thickness is spread and a quantity of 1-inch broken stone is rolled into the surface. The slight unevenness caused by the projecting points makes skidding unlikely and furnishes a good footing for horses. Some of the pavement laid three years ago has been so satisfactory that more is being built every year.

### STANDARD SEWERAGE UNITS.

(Continued from page 38.)

The length of sewer included in the measurement paid for is the total over-all distance from the center of the manhole where a given size of sewer starts to the center of the manhole where it ends, or to the end of the sewer itself if it does not end in a manhole. Where one size changes to another by a reducer, each size is assumed to extend to the middle of the reducer, and an additional sum is paid for the reducing special; except that where a more or less elaborate reducing chamber is constructed to join large sewers and is paid for as a special construction, the measurements stop at the ends of such special construction. This practice might be criticised, in that part of this measurement include Y and T branches and the manholes, and a payment is made for them as straight pipe and an additional payment as special construction. In defense it may be said that it has been the standard practice of many (the majority, we believe) of engineers for at least twenty-five years; that it is generally understood by contractors and leads to no confusion when it is specified that this will be the practice; that it avoids disputes as to the lengths to be deducted for each branch and manhole; and makes the calculations simpler and less liable to mistakes. The length should be the true length between the points mentioned, and not the horizontal distance; although the difference between the two is not considerable, amounting to about one inch in 100 feet for a 4 per cent grade.

As just stated, branches are paid for under two items, once as so much straight sewer, and again as "branches." A branch 2 feet long costs  $2\frac{1}{4}$  times as much as 2 feet of straight pipe of the same size. The contractor therefore can simply charge for each branch  $1\frac{1}{4}$  times the cost of 2 feet, or  $2\frac{1}{2}$  times the cost of one foot, of straight pipe of that size; plus an additional sum for capping the branch when this is done, which latter would probably be figured extra whatever the method of measuring and paying.

Manholes are generally built with a special bottom provided with a channel or channels, side walls of standard thickness, and a head and cover of iron; also with steps at stated vertical intervals. The bottom and top are uniform in construction and cost, but for the side walls these vary with the depth. Where a manhole is less than 6 feet total depth (measured from ground surface to invert), the construction is more difficult, and this fact would probably make a 4-foot or 5-foot manhole cost as much as a 6-foot one. The A. S. M. I. unit therefore takes the cost of a 6-foot manhole as a standard, receiving a bid on this entire, including bottom, top casting, side walls and steps; and an additional sum per vertical foot for additional depth of manhole, this consisting only of the wall and the steps therein. Thus a 9-foot manhole would be recorded and bid upon as one standard depth manhole plus 3 additional feet. This would seem to be much more rational and fairer to the contractor than to ask him to bid so much per manhole, regardless of the depth, requiring him to figure, estimate or guess what the average depth of manholes on any particular job will be.

"Replacing pavement" includes all the work of both removing and restoring all pavement over the trench which is additional to that which would be necessary in case of a dirt road; including the replacing with new ones of any blocks or other materials damaged in removing them. The unit of measurement is the square yard. The specifications sometimes specify what width of pavement strip will be paid for, in which case length of pavement replaced would be sufficiently definite for a given contract and given size of sewer. But the width will increase as the size of sewer increases above 15 or 18 inches, and the latter plan would therefore require a different bid per foot for each size of sewer greater than 15 or 18 inches, and would render it difficult to compare prices on different pieces of work. The kind of pavement is of course specified.

As to the numerous other features of sewer construction, as they are so irregular, differ so from job to job, and are not essential or peculiar to all sewer work, no effort has been made to establish standard units for them, for the present, at least; although the society has adopted standard bidding blanks and standard specifications to cover them. Such are rock excavation, sheathing left in trench, foundations, sub-drains, catch-basins, flush-tanks, etc.

### METERS IN THE BOSTON METROPOLITAN DISTRICT.

The following table shows the daily per capita consumption of towns in the metropolitan water district and the percentage of services metered, for the year 1915:

City or Town.	Gallons.		Per Cent of Services Metered
	Total per Day	Per Capita per Day	
Milton .....	338,900	39	100
Medford .....	1,245,200	40	100
Malden .....	2,243,000	46	95.54
Stoneham .....	373,700	50	98.51
Melrose .....	851,500	50	100
Belmont .....	425,400	52	100
Winthrop .....	700,300	54	100
Arlington .....	825,300	55	100
Revere .....	1,484,800	58	70.81
Swampscott .....	436,400	59	100
Quincy .....	2,511,800	61	88.55
Watertown .....	1,025,200	62	100
Lexington .....	358,700	64	91.96
Chelsea .....	2,901,400	66	99.72
Somerville .....	5,807,100	67	69.19
Everett .....	2,599,100	68	50.01
Boston .....	77,651,800	104	53.15
Nahant .....	161,900	116	64.11
Total District.....	101,941,500	88	66.81

### OILING STREETS IN VANCOUVER.

For oiling and sanding streets in Vancouver, B. C., a Peerless truck has been fitted with an oil tank and distributes cold oil by gravity. A sander follows this machine, spreading sand over the oil. During last season, 532,287 square yards of streets were oiled at a cost of 1.09 cents per square yard. This included cost of oil at 3 cents per imperial gallon, sand at \$1.60 per cubic yard and all labor for removing dust, sprinkling oil, spreading sand, teams and rental of plant, but no overhead expenses. In 1914 the cost was 1.23 cents per square yard, showing a material reduction. No streets were oiled more than once, but it would have been better if a few of the principal streets had received another coating. This oil and sand has not only prevented dust, but has prolonged the lifetime of the macadam roads.



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JULY 20, 1916

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## Locating Distributing Reservoirs.

Reservoirs are used for and serve several purposes, such as the intercepting and storing of water as it flows more or less intermittently from catchment areas; reducing the static head on a distribution system when the impounding reservoir is very high above the city; holding in reserve a supply for emergencies such as fires, breaks in conduits, or droughts; providing two or more supplies at different elevations where the city area covers elevations differing by several hundred feet; and reducing the length of direct feeder to the distribution system.

The plans for improving the supply of Seattle, Wash., described in this issue, provide for reservoirs for accomplishing several of these purposes. Probably the most important is the one last referred to—reducing by more than half the length of the pipe lines relied upon for supplying water to the distribution system at the maximum rate demanded by the consumption.

This function of a reservoir is often overlooked and the saving made possible is not taken advantage of. The maximum rate of use in a city may easily be two to five or six times the average consumption, requiring that the main feeder from reservoir to distribution system be of corresponding capacity. If the reservoir be several miles away, not only must the length of pipe of such maximum capacity be of this length, but its size must increase with the length to keep the friction loss of head down, unless there be head to spare. Therefore if a reservoir one mile from the city center can be substituted

for one five miles away, the cost of this direct-service pipe line can be reduced by more than four-fifths. There will generally remain the necessity of a line along the other four miles, it is true; but this can flow continually at the *average* rate of consumption, and therefore need be only one-half to one-sixth the capacity of the one mile nearest the city. There will often be found cases where a sufficient saving can be made in the cost of pipe to largely or wholly pay for the reservoir.

But a reservoir near the city possesses even more important advantages. A break in a main feeder of the distribution system is a serious matter, and by reducing the length of such feeder we reduce the probability of a break. In fact, the danger is probably reduced by an even greater ratio than the length, since a break several miles from the city may conceivably be much more difficult to reach for making repairs than one just outside the city. With the short line the pressure head in the city remains more constant under fluctuating rates of consumption; also the surge pulsations are less with a short line, and to some extent water hammer also.

These several advantages argue strongly in favor of locating a reservoir as near as possible to the distribution system.

## City Health Boards.

There has been, from time to time, discussion concerning what branches of municipal activity should be placed under the direct control of a local board of health. Some of the more progressive municipal sanitarians maintain that if such board confines itself to purely health matters—to assuring the purity of food, the sanitary surroundings of dwellings, the proper handling of infectious diseases, and the like—they are using their energies where they will do the most good and will find their time fully occupied if they do this properly. Others, however, hold that house plumbing, refuse collection, sewage treatment and other matters but indirectly connected with the citizens' health, should be under the immediate charge of the health board. One physician and health officer complained in our presence that the city engineer rather than himself was being entrusted with the decision whether his city should adopt "this acidulated slug" method of sewage treatment.

Sewerage and sewage treatment and water purification are sanitary engineering matters; house plumbing is a matter of plumbing and building construction; refuse collection is chiefly a matter of organizing a force of men of not too high mental attainments. Most physicians have no knowledge of these matters and no ability along such lines. Their connection with them should be confined to seeing that the refuse is collected in a sanitary manner and that no nuisance is caused by this or the disposal; to giving warning if any sickness is traceable to an impure water supply; and to requiring the sewerage engineers to prevent the operation of sewers or disposal plant in such a way as to endanger the health of the community. The actual *doing* of these things is no more their province than is the manufacturing of trusses, of surgical instruments, or of the bottles which hold their medicines.

Refuse collection and disposal are still entrusted by a number of cities to a health board composed of physicians. But the management of such work is entirely foreign to the practice of medicine, and it is not to be wondered at that since cities began entrusting this work to engineers, more advance in methods is being made each year than in any decade before that.

# The WEEK'S NEWS

Federal Aid for State Roads—Infantile Paralysis Continues—The Sewerage Problem on the Canadian Border—Burst Mains in Baltimore and Bayonne—United States Gas Production—Fires in Pittsburgh and New York—Municipal Finance Investigation in New Jersey—Nashville Again—The Montclair Election—Engineering Advice for Duluth—The San Francisco Survey—Grade Crossings in New Jersey.

## The Federal Road Aid.

Washington, D. C.—Under the provisions of the Bankhead-Shackleford bill just signed by President Wilson, federal aid for state road building will be apportioned as follows:

State.	Total.		
Alabama	\$1,608,000	Nevada	1,004,250
Arizona	1,076,250	New Hampshire	324,750
Arkansas	1,272,750	New Jersey	912,000
California	2,336,250	New York	3,877,500
Colorado	1,302,000	New Mexico	1,235,250
Connecticut	478,500	North Carolina	1,746,000
Delaware	124,500	North Dakota	1,176,000
Florida	840,750	Ohio	2,905,500
Georgia	2,079,750	Oklahoma	1,773,750
Idaho	941,250	Oregon	1,221,750
Illinois	3,432,000	Pennsylvania	3,585,750
Indiana	2,109,000	Rhode Island	180,750
Iowa	2,260,500	South Carolina	1,111,500
Kansas	2,231,250	South Dakota	1,256,250
Kentucky	1,509,000	Tennessee	1,773,750
Louisiana	1,019,250	Texas	4,515,750
Maine	731,250	Utah	869,250
Maryland	662,250	Vermont	354,000
Michigan	2,259,750	Virginia	1,530,000
Minnesota	2,190,750	Washington	1,098,750
Mississippi	1,371,000	West Virginia	825,750
Missouri	2,633,250	Wisconsin	1,983,000
Montana	1,512,750	Wyoming	956,250
Nebraska	1,660,500		

## Auto Races Prohibited.

Harrisburg, Pa.—State Highway Commissioner Black has taken decisive action to enforce a ruling made by the late State Highway Commissioner Cunningham prohibiting the use of state highways for automobile racing contests and hill climbing contests. It was reported to the state highway department recently that there was to be a hill climbing contest held on the mountains near Uniontown, in Fayette County, on July 20. Last year a contest of this nature was held at the same place and it was then that State Highway Commissioner Cunningham issued notice that such events would be prohibited in the future. Notwithstanding this warning, the promoters arranged for a similar contest this year and advertised it extensively. Consequently, Commissioner Black communicated with Major John C. Groome, superintendent of state police, requesting that he co-operate with the state highway department by furnishing a detail of state police to prevent the race taking place and he requested Major Groome that these men be ordered to Uniontown at a date sufficiently before the twentieth to prohibit any preliminary trial contests taking place on the roads. Commissioner Black has determined that all such contests, whether they be speed records or hill climbing, will be prohibited on state highways not only because of the damage to the improved roads from these events but also because of the interference with the regular traffic over the highways.

## The Paving Commission of Syracuse.

Syracuse, N. Y.—The Syracuse paving commission, created by the amendment to the department of public works act, will organize within a short time. When it was decided to amend the law so as to relieve property owners from the maintenance of pavements after they have paid for the original pavement, it was considered that the city at large should have control of the type of pavement first laid, rather than to leave it entirely to the designation of the property owners. The paving commission is required by the amendment to prepare a map of the city, designating the different kinds of pavements which may be laid on all unpaved streets. This designation is to be based on the character of the traffic in each street. For each street several kinds of pavement will be permitted, and where pavements are ordered the property owners will be en-

titled to designate which one of the materials they desire. On their failure to exercise this privilege the common council may designate in the same manner as formerly. The commission also will consider the materials to be used for resurfacing pavements and for repaving streets. This expense comes entirely upon the city at large. For the improvements so far the common council has designated the material. In all cases the old pavements were of asphalt, and this has been designated, with the exception of three contracts, for which bithulithic was substituted for asphalt. The members of the commission are: Henry C. Allen, city engineer; Richard B. Williams, Jr., commissioner of public works, and Alderman Bedford, chairman of the highway committee of council.

## Road Bond Issue Legal.

Jefferson City, Mo.—The Supreme Court has held the proposition adopted in St. Louis County last January to issue three million dollars in bonds for improving highways legally submitted and legally adopted, and the fact that eleven incorporated cities could not obtain any of the funds for street improvements would not invalidate the issue. The court objected to the bond issue as fixed by the county court, as the date for maturity of the securities was not in compliance with the statutes. This error can be corrected by the county court in another issue. The principal point of attack on this issue of bonds was that the incorporated cities would not derive any benefits, although they represent a large per cent of the population and tax payers. The court also decided in the same opinion the bond issue for road purposes voted by Jefferson County two months ago for one-half million dollars was legally adopted.

## SEWERAGE AND SANITATION

### Infantile Paralysis.

New York, N. Y.—The epidemic of acute anterior poliomyelitis continues unabated, every day bringing out its quota of more than a hundred new cases and a score of deaths. While a number of days the increase in cases and deaths fell below the average, the next day's figures gave no cause for optimism. Up to July 19 the number of new cases was 2,175, and the deaths totaled 426. Brooklyn, where the epidemic originated, is still worse swept by the scourge than the other boroughs, although the situation in Manhattan is very serious. A great many conferences of experts and city officials have been held, but the discussions have not materially changed the program of the fight against the disease. Cleanups, warnings, isolation of homes and removal of cases are still the principal measures. A special meeting of the Academy of Medicine was held to discuss the disease and the study of it is being pushed rapidly. The origin, nature and methods of transmission of the disease are, however, still only vaguely known. The Rockefeller Institute classifies cases into three main types: Abortive cases which never become paralyzed; the cerebral group with paralysis, and the bulbo-spinal group. Between 25 and 50 per cent. of cases are diagnosed as abortive and these are the greatest danger as foci of infection. Cases of the bulbar type of paralysis, with difficulty in speaking and swallowing, are not uncommon in this epidemic and have in some instances been diagnosed as croup. In fact, many of the cases are difficult to recognize. Adrenalin is being used in one of the hospitals by Dr. Meltzer, but the experiment is not extensive



enough to be reliable. Health Commissioner Haven Emerson has stated that practically all of the cases are located in the more congested and poorer sections of the city, and that not a single death has occurred in the well-to-do neighborhoods. Pressure is being brought to bear on the health department to suppress accounts and allay public fears and discussion by real estate and business interests who are finding that the boom of New York as a summer resort is being seriously affected by the scare.

The number of out-of-town cases continues to increase and the municipalities cannot do any more than New York. A great many surrounding cities are barring New York visitors, especially children. Quarantine has been established at railroad stations and outgoing children are being examined and given certificates before leaving the city. Meriden, Conn., has absolutely barred, under penalty of a heavy fine, the entrance of any children from New York or other infected place. Children already there have been all examined. Deaths of visiting New York children have occurred in Holyoke, Mass., Buffalo, N. Y., New London, Conn., and Altoona, Pa. In New Jersey local health reports indicate that cases over the state are developing at the rate of more than one every hour and the disease, at first prevalent only in the northern section; is now in Trenton and the southern districts. Rochester, N. Y., has barred New York children from its playgrounds. New Rochelle, N. Y., has ordered that no New York City visitors be allowed to use its municipal beach. Hoboken, N. J., drove out a family of seven, which had moved there from Brooklyn, and four other families were intercepted at the ferry and sent back. At Hudson, N. Y., strict regulations are enforced in an attempt to stop the spread of the disease, and Dr. May, of the state health department, has been in the city aiding the local authorities in their fight. Governor R. Livingston Beeckman of Rhode Island has had a conference on methods of fighting the epidemic with Dr. Gardner T. Swarts, secretary of the state board of health. Judge J. R. Salmon of Morris county, N. J., has been summoned to appear before Mayor Blanchard of Boonton for violating the very strict quarantine which prohibits any child under 14 entering the city without a certificate. The playgrounds of Elizabeth, N. J., have been closed. No minors are allowed in the theaters of Perth Amboy, N. J. A Brooklyn child has brought the disease to Utica, N. Y. Children arriving in Akron are registered at the station by board of health physicians and close watch is being kept. Dr. Samuel G. Dixon, state health commissioner of Pennsylvania, has issued a statement that a strict quarantine like that being enforced in New Jersey is unnecessary. Children arriving on eastern trains are being examined in St. Louis, Mo. Dr. Jean Dawson, chief of the bureau of fly prevention is in active work in Cleveland, O. In Washington, D. C., the police department began the distribution of 50,000 circulars issued by the commissioner urging cleanups and warning against the disease. In Newark, N. J., the disease is strengthening its grip, and a cleanup is to be made of the Tenth ward, where the cases predominate.

Cases and some deaths have been reported in Paris, Ky.; Mitchell, S. D.; Athens, Ga.; Augusta, Ga.; Toledo, O.; Wilkes-Barre, Pa.; Bridgeport, Conn.; Chicago, Ill.; Providence, R. I.; Newport, R. I.; Poughkeepsie, N. Y.; Pawtucket, R. I.; Perth Amboy, N. J.; Roosevelt, N. J.; Jersey City, N. J.; South Orange, N. J.; Hoboken, N. J.; Paterson, N. J.; Bayonne, N. J.; Yonkers, N. Y.; Torrington, Conn.; Stamford, Conn.; Stonington, Conn.; Boston, Mass.; Toledo, O.; Erie, Pa.; Connellsville, Pa.; West Bend, Wis.; Louisville, Ky.; Huntington, W. Va.; Minneapolis, Minn.; St. Paul, Minn.; St. Louis, Mo.; Cleveland, O.; Winfield, Kan.; Belleville, O.; Marion, Ind.; Des Moines, Ia.; Fall River, Mass., and Newark, N. J.

#### Birmingham's Typhoid Epidemic.

Birmingham, Ala.—It is believed by the Health authorities that the typhoid epidemic, which has been raging through the city, is now under control and that from this time the number of new cases will decrease. There were 116 cases reported for the month of June and about 200 in

the first nine days of July. The number of cases in 1913, 1914 and 1915, for the month of June, were 34, 45 and 43 respectively. Commissioner of Health and Education John R. Hornaday organized his whole forces for the fight and Chief Sanitary Inspector W. C. Burson and Mrs. M. H. Willis, food inspector, have been taking drastic measures to enforce the sanitary laws of the city. About four thousand people have been vaccinated free, at a cost to the city of 21 cents per vaccination. Chief Health Officer Cecil I. Gaston is in active charge of the work and he has the aid of Dr. B. L. Armes, chief state bacteriologist, and two federal experts, Drs. C. C. Lumsden and Carl Fox. A federal public health expert is to reorganize the whole health administration of the city.

#### Septic Sore Throat Epidemic.

Bridgeport, Conn.—Health Officer E. A. McLellan and the other health authorities feel justified in believing that the epidemic of septic sore throat is now over. There were more than 200 cases reported and more than a dozen deaths. Dr. A. C. Knapp, meat and milk inspector, exercised strict watch over the city's supply of dairy products.

#### The Border Sewerage Problem.

Windsor, Ont.—Appointment of a board of engineers to prepare plans for joint sewerage and water systems for the border municipalities was the most important step taken by the Essex border public utilities commission at Windsor, Ont. Formation of the board, which consists of Morris Knowles, engineer for Ojibway, the Canadian steel city; Edward Brian, Windsor city engineer; Owen McKay, engineer for Ford City and Walkerville; J. J. Newman, for Sandwich West, and Charles R. McColl for Sandwich, was recommended in the report of Mayor W. W. Woollatt of Ojibway, and Mayor Charles Montreuil, who represented the Canadian municipalities at the Detroit session of the international waterways commission. The international commission, the Canadian representatives said, intimated that the present method of dumping sewage into the Detroit river must cease, or the matter would be taken from control of the municipalities. This threat caused the border commission to take steps for improvement in both sewerage and water systems, and the appointment of the board of engineers. The international commissioners stated that the approximate cost of a new system for the border towns would be in the neighborhood of \$1,500,000, but it is believed that this figure can be materially reduced by co-operation of the six municipalities. When the plans are perfected ratepayers of each of the municipalities affected will vote on the project. In the event of one or two deciding against the work will not be held up, as there is a clause in the act under which the commission was authorized which gives power to the other municipalities to lay trunk sewers within the boundaries of any one of the six. William Woollatt, mayor of Ojibway, was chosen chairman; J. E. Doane, of Walkerville, secretary. The other members are: Mayor A. W. Jackson and C. H. Smith, Windsor; Mayor H. R. Hatcher, Walkerville; Mayor Charles Montreuil and Lieutenant-Colonel Walter L. McGregor, Ford City; Reeve Remi Laframboise and Bert Lafferty, Sandwich West; Mayor Robert Maisey and Charles Chapman, Sandwich, and Barrister O. E. Fleming, Ojibway.

#### Improvements of Boston's Sewer System.

Boston, Mass.—After numerous delays because of unfavorable conditions, work on the temporary outfall of the Northern Metropolitan sewer at Deer Island has reached a stage so that the engineers hope to be able to divert the flow into it within a few weeks. Then the main undertaking of extending the present outfall of the system into deep water can be taken up. An interesting part of the present work was the laying of a section of sixty-inch cast iron pipe, weighing twenty-four tons, from a lighter, in fifteen feet of water, in a swift current. This was accomplished in twenty-five minutes, by contractor George M. Byrne of Winchester. The Northern District Metropolitan sewer, with a daily flow of 50,000,000 to 150,000,000 gallons, accommodates those parts of Boston north of the Charles River, also East Boston, Arlington, Belmont, Cambridge,

Chelsea, Everett, part of Lexington, Malden, Medford, Melrose, Reading, Revere, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn. The outfall was constructed in 1889. The plan was to take the sewage six miles down the harbor and to discharge it at the low water level. Since that time the system has developed to such an extent that there have been frequent complaints of a nuisance in the lower harbor. Two years ago the legislature ordered a change and appropriated \$125,000 for the purpose of extending the outfall into deep and "quick" water, where it may be discharged far below low water mark. In order to extend the present line it was necessary to divert the sewage. The temporary sewer will cost more to construct than will the extension of the present main line. George M. Bryne of Winchester is contractor on the temporary work, his figures being \$44,000 and the state furnishing the iron pipes. Roy H. Beatty has the contract for the main extension at approximately \$40,000, the state furnishing the pipes. For diffusing the sewage a novel method is to be employed. At the upper end of the new line the pipes will be 84 inches in diameter, while at the outfall end they will be only 48. The pipe tapering in this way, outlet for part of the sewage is afforded through openings left in the tops of thirteen of the pipes. The engineers calculate the sewage will be discharged at levels varying from 24 to 45 feet below low water mark and distributed over a distance of about 115 feet. This they think, will do away largely with the present cause of complaint.

## WATER SUPPLY

### May Assess for Extensions.

Janesville, Wis.—The right of the city to lay water mains and spread assessment for the cost has been upheld by the state railroad commission at a hearing at Madison on the complaint made by Joseph Denning. Denning in his claim to the commission held that the city should pay for the construction of the water main and that the property owners should not be required to pay part of the cost. The matter of the payment for service connections from the water mains to the curb lines was not settled, the state commission holding the decision over until city attorney W. H. Dougherty can produce legal data on the case. The question of the purchase by the city of meters is to be considered in the adjustment of the water rates, so that point of the complaint was also left open, until the rate schedule is announced by the city. It was pointed out by Carl Jackson, member of the commission, that the commission had no right or jurisdiction to change the statutes as passed by the legislature. Since the city had regularly and properly adopted certain sections of the state law, which allow for the spreading of assessment for water mains, the commission was powerless to make an adjustment. The question

of the purchase of meters was discussed by the commission and Mayor Fathers, and it now appears certain that the city will follow the recommendation of the commission and purchase all meters. A system for giving credit on water bills may be devised whereby the owners of meters obtain just compensation for their equipment.

### Roof of New Filter Plant Collapses.

Cleveland, O.—A section of the roof of the new Division avenue, N. W., filtration plant's clear water basin crashed to the floor when two concrete piers collapsed. Water Commissioner Charles P. Jaeger declared that the falling in of this section would delay full operation of the plant indefinitely and that an inspection of all of the concrete in the basin must now be made. The section that collapsed is 32 feet square. The work is guaranteed for a year and the city has not made the final payment on the job. The basin was constructed by the Walsh Construction Company. The wreck of this portion of the basin will not postpone the opening of the first unit, as there is sufficient storage space in the filtration plant proper, but the opening of other sections will be delayed, in the opinion of the commissioner. Under the term of the contract the city can order the contractor to repair the damage, and if he fails to do so it can do the work itself, deducting a proportionate amount from the contractor's payment.

### No Free List for Water.

Columbus, O.—All charitable institutions, organizations and hospitals that have been on the waterworks "free list" in the past will have to pay for water consumed this year, according to a policy just inaugurated by council. A resolution was adopted declaring that, because of the deficiency in the city's general fund, it will be necessary to collect bills, which already have been rendered such institutions for the first three months of 1916. The charter grants council permission to remit or relieve any institution of its water bills, but in so doing must make prompt payment to the division of water from the general fund. The general fund is practically depleted, hence the decision to force payment. It is estimated that the hospitals and other institutions have been consuming about \$7,500 worth of water every year, for which the city has received no payment. Unless bills are paid by August 1 the water supply will be shut off.

### Burst Main Rips Pavement.

Baltimore, Md.—The accompanying illustrations show the effects of the bursting of a forty-inch water main. The break uprooted two trees, ripped up the pavement, flooded cellars and threw big masses of earth, bricks and iron pipe into the air. The water ran free nearly all night. A large force of laborers from the water department and the Consolidated Gas, Electric Light and Power Company were at work making repairs on the main and the pavement.



Courtesy, Baltimore (Md.) News.

EFFECT OF BURST MAIN ON PAVEMENT IN BALTIMORE.



**Wells Fail at Fire—River Valve Opened.**

Shelbyville, Ind.—Finding suddenly at the call for water to fight a big fire that the well supply had failed, the engineer of the Interstate Public Service Company opened a valve in the intake pipe from the Stone River. The people are now scared, and the president of the company has asked the state board of health for aid in getting rid of the suspected pollution in the supply. The well condition is to be investigated and the city's seal is to be placed on the intake valve.

**Broken Main Causes Long Famine.**

Bayonne, N. J.—A big main broken out on the meadows between this city and Arlington was the cause of a famine that lasted ten and a half hours. Superintendent Kavanagh of the New York and New Jersey Water Company, owners of the big main, finally succeeded in connecting the pipe with that of the Jersey City supply. This gave a very inadequate amount. The city was left without fire protection. The hospital had to use automobiles to collect water from houses.

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**STREET LIGHTING AND POWER**


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**Gas Production in the United States.**

Washington, D. C.—Statistics of the gas industry in the United States for 1914 have been prepared by the United States Bureau of the Census, which has compared the figures obtained with those representing the census of 1909. The value of all products of the industry in 1914 was \$53,423,410 more than in 1909; and the output of manufactured gas in 1914 exceeded that in 1909 by 52,894,308,000 cubic feet in quantity and by \$36,450,621 in value. Returns were received from 1,284 establishments in 1914, the total products of which for the year were valued at \$220,237,781. The gas products comprise 203,730,191,000 cubic feet of gas, valued at \$175,065,930, consisting of 10,509,946,000 cubic feet of straight coal gas, valued at \$10,726,514; 90,017,725,000 cubic feet of carbureted water gas, valued at \$74,516,534; 86,281,339,000 cubic feet of mixed coal and water gas, valued at \$72,012,021; 16,601,805,000 cubic feet of oil gas, valued at \$15,044,509; 137,964,000 cubic feet of acetylene, valued at \$2,511,634; and 181,412,000 cubic feet of other gas, chiefly if not entirely gasoline gas, valued at \$254,718. In addition, the gas plants produced for sale 114,091,753 bushels of coke, valued at \$7,719,910; 125,938,607 gallons of tar, valued at \$3,252,756; and ammonia liquids, ammonium sulphate, and hydrocarbons, valued at \$1,405,540. They also sold "other products"—consisting largely of gas purchased for sale—to the value of \$20,815,871. Receipts from rents and sales of lamps and appliances aggregated \$10,977,774. At the census of 1909 there were reported 1,296 establishments, with products valued at \$166,814,371. Of this amount, \$138,615,309 represented the value of 150,835,793,000 cubic feet of gas; \$5,723,215, the value of 82,049,683 bushels of coke; \$1,875,549, the value of 78,339,880 gallons of tar; \$770,211, the value of ammonia liquors and hydrocarbons; \$12,786,697, the value of other products; and \$7,043,390, the receipts from rents and sales of lamps and appliances.

**Court Holds Franchise Perpetual.**

Omaha, Neb.—Federal Judge Joseph W. Woodrough, in refusing to accept the motion of the city for the dismissal of the case in which the city and the Omaha Electric Light & Power Company are contending, indicated that his final decision would be adverse to the city. He based his refusal on the ground that the United States supreme court had already decided the issues and that he would find accordingly. The Old Colony Trust Company case, which went to the supreme court in 1911, was an action instituted by the bondholders of the lighting company to prohibit the city from disconnecting the power wires of the company. The city contended that the franchise gave the company the right to sell electric current for lighting purposes only, while the company claimed that it included the right to sell the current for lighting and heating purposes. The finding of the supreme court was adverse to the city, holding that the company had a perpetual right to sell electric current, and Judge Woodrough takes the position that this judg-

ment includes the power and heat uses of the current. Inasmuch as the circuit court of appeals has already interpreted the Old Colony decision as including the heat and power uses, the only possibility for a final victory for the city lies in the supreme court, which might modify its findings to a perpetual franchise for lighting without including the power use. The city will continue the suit now before Judge Woodrough by bringing forward more evidence and appealing it.

**Street Lighting Costs of Milwaukee.**

Milwaukee, Wis.—The demonstration of the municipal lighting system, in operation since last February, has cost the city \$37,517.61, according to a report submitted to the council by Public Works Commissioner Simmons. The system includes 170 electric and 22 gas lamps. Of the total cost, \$33,557.93 has been paid, and there is still owing \$1,611.47. The cost of maintenance to date is given at \$233.38 and the cost of operation at \$1,428.60.

**Utilities Valuations in Ohio.**

Columbus, O.—Showing an increase of \$4,927,180, valuations placed by the state tax commission upon electric light companies of Ohio for 1916 aggregate \$40,774,220, against \$35,847,040 in 1915. The figures do not include light companies which also furnish transportation. The commission has announced valuations of privately owned waterworks companies, which show an increase of \$251,350. The valuation for this year is \$1,754,420, against \$1,701,860 last year.

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**FIRE AND POLICE**


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**Big Business District Fire.**

Pittsburgh, Pa.—About \$400,000 damage was done by an early morning fire in the heart of the Pittsburgh business district. For a time the destruction of an entire business block was threatened, but the firemen were able, after two hours' work, to confine the fire to the M. Kaufman warehouse, which was entirely destroyed, and an adjoining four-story brick building which was badly damaged.

**Big Searchlight for Police Signal.**

Fort Worth, Tex.—A large searchlight, electrically controlled, will soon be placed on the top of the city hall for the purpose of signaling patrolmen in the residence sections, suburbs and North Side. Mayor Tyra has ordered a system of signaling to be mapped out and this is now being done. The light will be worked by a lever on the operator's desk in the sergeant's office. The light will cost between \$600 and \$700 and will cast a beam four miles. A device will be attached to the light so that the beam will fall upon only the beat of the officer wanted, who will immediately telephone headquarters. In case of a general alarm, the beam could be thrown on all beats at once.

**Fire Destroys New York Arsenal.**

New York, N. Y.—The State Arsenal, the executive headquarters and supply depot for the National Guard in New York, was burned while tremendous crowds fought alternately with the police to get closer and among themselves to get further away from the powder-filled building. Thomas McNally, a state chauffeur, lost his life trying to save some of the eight auto trucks loaded with supplies, which were on the main floor of the building. Three firemen succumbed to the stifling smoke and were taken to New York Hospital. A score of others, though overcome time and again, managed to keep in the fight. Due to the quick wit and daring of John Cummings, custodian of the arsenal, the magazine, which contained 300,000 rounds of shrapnel and 100,000 three-inch shells, was flooded and did not explode. Scattered about on the three floors of the structure, however, some of them in the magazine, were between 300,000 and 400,000 rifle cartridges. The flames found many of these. Lieutenant Colonel Henry O. Bostwick estimated the loss at between \$300,000 and \$500,000, he thought. The building was burned out completely, except for the third floor, and the supplies stored there are badly damaged by water. The repair shop on the ground floor was apparently the source of the fire. Including the officers, clerks and helpers there were about fifty people in the building. Cummings,

a private assigned as custodian of the arsenal, noticed smoke seeping through cracks in the floor. He shouted the alarm and then ran the gauntlet of the fire and flooded the magazine. Before the firemen arrived employees in the arsenal tried to fight the blaze with buckets. Deputy Chief Martin, who arrived with the first firemen, sent in two more alarms in quick succession. For two blocks around it was hard to breathe because of the smoke. Beneath the firemen stretched an iron fence whose sharp pickets menaced them as they swayed, strangling, on the ladders. Fireman after fireman was bowled over and carried down by his comrades. After lying for a few moments on the sidewalk, most of them staggered back to their line. There were a number of thrilling rescues of their comrades made by the firemen. John B. Corrigan found the body of John P. McNamee, unconscious from the smoke. McNamee is a heavy man and his friend carried the body dodging through a number of powerful streams. He finally got the body to the window and put it at the top of the ladder and then doubled up unconscious himself. Both were rescued.

#### **No Uniforms—Firemen Let Building Burn.**

Hanover, Pa.—An unoccupied dwelling owned by the Lehigh & Wilkes-Barre Coal Company, in Breslau, was totally destroyed by fire of unknown origin. The Breslau volunteer fire company refused to answer the fire alarm, because they did not have any coats or boots in which to work. No attempt was made to save the structure, and it burned to the ground. The damage is estimated at \$1,100. The Taxpayers' Association, of which the coal companies in Hanover township are the active members, recently succeeded in having a temporary injunction granted against the commissioners of Hanover township, preventing them from entering into contracts for motor fire apparatus as well as outfits for the volunteer firemen of the seven districts. The men who refused to fight the blaze cited this instance, in their refusal to aid.

### **GOVERNMENT AND FINANCE**

#### **New Jersey Commissions on Municipal Finances.**

Trenton, N. J.—A combined conference has been held here between the commissions appointed by the last session of the legislature to study the question of municipal finances and the revision of laws pertaining to municipalities. The purpose of the conference was to bring about a harmonious solution of their problems, having in mind that both commissions will of necessity have to dovetail their finances. It was pointed out that one commission has for its object investigation of the methods of making improvements in municipalities and providing for the manner they shall be taxed, while the other commission will have to deal with the raising of finances to cover such work. As it is apparent that in this respect the work of the two commissions will be somewhat similar, it was the consensus of opinion of the members that they shall perform their duties as a unit to facilitate their work and to bring about a happy solution of the problems. Other conferences of the two commissions will be held from time to time as the work of their investigations continue. It was intimated that a combined report of the two bodies would be made to the next session.

#### **New Indictments and Treasury Shortage in Nashville.**

Nashville, Tenn.—Indictments have been returned by the grand jury against Lyle Andrews, former city comptroller; Charles Myers, former city treasurer, and W. L. Murray, former city auditor, charging larceny, embezzlement, receiving stolen property and receiving embezzled property. Indictments against each were returned in three cases, the sum of \$10,000 being named in two cases and \$5,000 in the third. The present action of the grand jury is understood to be a formal reindictment in former cases against all present defendants and R. Miles Burns, the last-named being omitted in the present instance. The principal witness appearing before the grand jury in connection with the new form of the indictments is stated to be J. B. ("Doc") West, former assistant city treasurer, who is stated to have made

to that body a full and complete confession of facts regarding the disappearance of the city books, the connection therewith of those involved in their disappearance and also of other facts relating to the charges of larceny, embezzlement, receiving stolen goods and receiving embezzled goods.

The treasury of Nashville suffered to the amount of \$71,187.79, attributed to activities of former city officials from 1909 to 1914, according to the final report to the city commission by James Cameron, an expert accountant, who has been auditing the city's financial books. The commission did not intimate what action it would take on the report.

#### **A New City Manager.**

San Jose, Cal.—Following the adoption of the new city manager charter, the new administration has begun work. Thomas H. Reed, of the political science department of the University of California, who had drawn up the original draft of the new charter, was chosen city manager at a salary of \$6,000. The council consists of seven members, Elmer E. Chase being chosen president for two years.

#### **Preferential Ballot in Montclair.**

Montclair, N. J.—With a first choice count of 1,597 out of 2,885 votes cast, and a total count of 1,874, vice president Louis F. Dodd of the Montclair Board of Education was the only man to obtain a majority of the votes on the first count in the election of commissioners. His nearest competitor, Mayor Edwin M. Harrison, with the first choice tally of 1,385 and 199 votes for second choice, totaling 1,584, was the only other man to obtain a majority on second choice. With third and other choices the total vote cast for Mayor Harrison was 1,672. The other successful candidates were John Picken, whose total vote was 1,200, John C. Barclay, who received 1,171 votes altogether, and Charles G. Phillips polled a total of 1,102. An interesting feature of the election was that but for his votes in the second and third choice columns Mr. Picken would have been defeated. George D. Dodd, with 881 votes, and John L. Cox with 679, both exceeded his first choice total of 670. Mr. Cox was passed, however, by Mr. Phillips, who had 819 first choice credits. Under the Walsh act it is customary for the commissioner receiving the largest total vote to be named as mayor by his colleagues, and Mr. Dodd was selected for that position when the new officials convened for organization.

#### **Try to Oust Second-Term Mayor.**

Wilkes-Barre, Pa.—Setting forth that he is ineligible to serve in office, because the act denying the right of mayors of third class cities to succeed themselves has never been repealed, William Leslie has served a quo warranto writ on mayor John V. Kosek. The mayor stated that he has retained counsel, and added that the move to oust him has been brought for purely personal reasons, and that he does not fear the suit as he has already established his right to serve through an opinion handed down by the court preceding the election which returned him to office. No charges of misconduct are set forth, the sole claim to the mayor's lack of eligibility being based upon a law of 1889 which has not been repealed by the state legislature. Before entering his campaign for re-election, Mayor Kosek asked the court of Luzerne county for an opinion, determining whether he would be eligible to run again. The judges were unanimous in declaring that under the law he would be permitted to be a candidate. In addition to that opinion he secured the advice of some of the best lawyers in the

#### **Advisory Board of Engineers.**

Duluth, Minn.—Commissioner James A. Farrell, head of the public works division, has appointed ten of Duluth's most prominent civil and mechanical engineers to serve as an advisory board for his department. This is the first undertaking of its kind since commission government went into power nearly four years ago. Invitations to serve on the board were mailed by the works head to the ten engineers and they have all accepted. They are: Wayne A. Clark, chief engineer of the Duluth & Iron Range Railroad; Clarence Coleman, member United States engineering corps; A. M. Gow, mechanical engineer; W. H. Hoyt, as-



sistant chief engineer of the Duluth, Missabe & Northern Railroad; John Uno Sebenius, general mining engineer of the Oliver Iron Mining Company; T. F. MacGilvray, civil engineer; W. B. Patton, civil engineer; Porter Alexander, civil engineer; John N. Pickels, chief engineer of the Canadian Northern Railroad; S. S. Rumsey, chief engineer of the Oliver Iron Mining Company, and Francis W. Sullivan, civil engineer and attorney. Mr. Sullivan is chairman of the city planning committee of the Duluth Commercial Club, and although he is now practicing attorney, is a graduate of an Eastern engineering college. This board is made up of some of the city's best engineers, who understand local conditions. Their advice will be sought on all important matters and no step will be taken by the works department until the board has had ample time to study and pass on it. The members of the board will work without pay and have agreed to give their time and engineering knowledge to the citizens of Duluth. Their assistance will help keep politics entirely out of the department and also avoid repetition of the many controversies over pavements that occurred last spring. If the city ever plans large construction work, big street improvements or expensive changes, this board will be consulted, and after the subject is studied thoroughly, its decision will be final and the report will be made to the commissioners. Before commission government went into power, street improvements were handled by a board of public works, which hired engineers and department executives. The board went out of office when the first commission was chosen in 1913 and the department has been in sole charge of the works commissioner ever since.

## RAPID TRANSIT

### Car Strike Ties Up Portland.

Portland, Me.—For the first time in the history of electric street car transportation in this city, which began in 1891, traffic on all the lines of the Cumberland County Power & Light Co. came practically to a standstill. Over 300 men including conductors, motormen, electric linemen and others went out. A demand that certain employees of the company dropped for reasons not yet stated be reinstated, that all men employed by the company in the future be union men or those about to become so, was made on the company. The men are organized in the International Brotherhood of Electrical Workers. Recognition of the union is the principal demand. Work at laying power and light lines on the new Portland bridge is held up.

### New Street Car Franchise.

Newport, Ky.—The street car franchise ordinance in its amended form has been passed by the city commissioners. It was thought a referendum would be demanded, but the plan has been abandoned. Under the ordinance the city receives \$120,000 during the life of the franchise. The streets of the city must be repaired by the successful bidder between the company's tracks and eighteen inches on the outside. Some complaint had been made because the city officials did not hold out for the sum of \$1,000 per month as rental. The desire of the commissioners was to keep out of the courts, get the best conditions possible and to build streets that are badly needed in Newport. The ordinance gives the citizens of Newport the right to transfers to Cincinnati cars any time such agreement can be made with the Cincinnati company.

### New Jitney Legislation.

Kokomo, Ind.—The jitney ordinance has been passed, with the exception of two minor changes, just as it was introduced. The ordinance provides that the owners must make application to the city clerk for a license and must state the number of passengers to be hauled, giving the state license number of the car. Cars with a capacity of five passengers will pay a license fee of \$15 a year and give a bond of \$1,500 a year, the mayor to approve the bond. Each additional passenger carrying capacity requires \$300 additional bond and \$3 additional license. No car may

carry more than the number of passengers permitted in the license and no one is allowed on the running boards or sitting on the doors. No more than one passenger is allowed in the front seat with the driver. The ordinance provides that the price to be charged for the hauling of passengers must be designated in the application for license and no more than this price can be charged. It provides that a sign stating the price charged must be displayed so it can be easily read from the sidewalk. It prohibits cars from stopping within thirty feet of the crossing on the square of any other congested districts, which the chief of police may designate. The ordinance does not cover taxis which remain in barns, including only cars soliciting business on the streets.

### California Railways Suffer Jitney Competition.

Sacramento, Cal.—Reports received by the State Board of Equalization on the total losses sustained by the railroads of California in 1915, and this year from jitney competition, show the loss in revenue will reach a total of about \$5,000,000. One of the heaviest losers was the Southern Pacific Company, which reports a reduction of \$500,000 in 1915 on account of the jitneys and an estimated loss of \$1,000,000 for 1916. The Santa Fe reports a loss of \$20,000 for 1915. Other companies reporting are: Northern Electric, between \$2,000 and \$3,000 a month; Sunset Railway Company, \$49,168.55 for 1915 and \$1,400 per month this year; Amador Central Railroad Company, \$3,000; Los Angeles & San Diego Beach Railroad Company, \$15,700; Holton Interurban Railway Company, \$25,000 in passenger receipts and \$15,000 in freight; Nevada County Traction Company, \$1,242.70. The loss to the state government from the reduction of railroad gross receipts will be approximately \$262,500.

## MISCELLANEOUS

### The Survey of San Francisco.

San Francisco, Cal.—The work on the survey of the city administration by the New York Bureau of Municipal Research is in progress. Dr. C. E. McCombs was the third of the four experts to arrive following the request of the San Francisco Real Estate Board. Dr. McCombs is connected with the health department of the New York bureau. He has come to study the organization of the local health department in all its activities and functions with the idea of making suggestions toward an increase in efficiency and economy. He is working in co-operation with the local health officers. The experts from New York now here are Dr. McCombs, Clement J. Driscoll, police and fire department, Herbert F. Sands, finance and accounting, and W. B. Holton, Jr., public works.

### Grade Crossing Act Constitutional.

Trenton, N. J.—The Fielder grade crossing act of 1913, under which the Erie Railroad was ordered to eliminate fifteen grade crossings in Paterson, estimated to cost \$3,000,000, has been held to be constitutional by the Supreme Court. In addition to the main opinion by Justice Trenchard, six other opinions were handed down by the court disposing of appeals taken by the Public Service Railroad Company and other corporations affected by the orders of the Board of Public Utility Commissioners for elimination. The single setback sustained by the Public Utility Commissioners was in an opinion by Justice Black setting aside an order of the board directing the alterations of a grade crossing on the Central Railroad at Cranford. In this case it was held that the board had exceeded its authority in directing the taking of land "merely desirable" for park purposes and not essential to the alteration of the crossing. Justice Garrison filed the court's opinion dismissing the appeal of the Public Service Railway Company, which was ordered to pay ten per cent of the cost of eliminating the Paterson crossing. This provision of the statute was upheld by the court as a legitimate exercise of the police powers of the legislature. The issue was brought before the court on writs of certiorari by the Erie Railroad. The Fielder act was passed in 1913, and the order of the

Utilities Commission pursuant to its provisions was made early in 1915, following the finding of that body that the Erie crossings in Paterson were a menace to safety and should be abolished. Paterson had filed a petition for the elimination of the crossings. The act provided that whenever the Utilities Commission found that public travel on the highway was made dangerous or was impeded by the railroad, the board might order a change of the grade.

#### City Loses in Districting Case.

Sacramento, Cal.—Adolph Teichert, whose building permit for an asphalt plant was revoked by the city commission, after the law had been complied with and the permit granted by City Building Inspector Rohl, won his action against the city commission in a ruling filed by Superior Judge W. A. Anderson of Yolo County. Judge Anderson holds the action of the city commission would be retroactive; that the resolution adopting the plans of John Nolen, by which method the building permit was revoked, is incomplete and the city commission exceeded its authority. One of the chief points on which the ruling is based is that, if the city commission, by resolution, could revoke a permit when the general requirements of the law had been complied with, it would place it in a position to single out individual cases and make it possible for the members of the city commission to be ruled by caprice.

#### Troubles of Municipal Saloons.

Lemmon, S. Dak.—At a recall election mayor B. R. Watt was defeated by Leo Gilman by thirteen votes. The opposition to Watt, it is said, arose from a dispute as to who should manage the municipal saloon.

Altoona, Wis.—Because of differences of opinion with the common council over the municipal saloon, C. G. King, mayor of Altoona, has resigned. The mayor is against the opening of the saloon under city management and his views are also held by one of the councilmen, A. Siegelhorst, who will also resign.

#### Municipal Golf Links Successful.

Seattle, Wash.—Seattle's municipal golf links are a great success, according to a statement by Colonel George Butler Lamping, a member of the board of park commissioners. The city has an 18-hole course which cost the city approximately \$40,000 to build. "It is self-sustaining and is operated under a slight fee system. It has been a success from the start. Over 30,000 people played on the course the first year. The board of park commissioners of Seattle consider it one of the greatest assets of the park system. A fee of \$1 a month is charged, which includes the use of the links and club privileges. We collected in excess of \$15,000 in fees during the first year's operation of the course. At the present we are overcrowded with players and unable to accommodate the public demand. Strong pressure is being brought upon the commission to improve and open another municipal course in some other part of the city."

#### To Employ Engineer for Smoke Abatement.

Louisville, Ky.—Authorization for the employment of an engineer expert on combustion to supervise a preliminary survey of Louisville for the elimination of the smoke nuisance has been voted by the executive committee of the Smoke Abatement League, and president Frank N. Hartwell is now in correspondence with one of the most expert men in the country in this field to ascertain whether his services can be obtained for a few months and extended to a longer period if sufficient funds can be procured. The committee now has enough money for the preliminary work, but if it is to be continued to the degree of greatest effectiveness the finances must be still further increased, and it is believed that the showing that can be made will do much to encourage further contributions to the fund. The executive committee is planning a renewal of the campaign in September, arranging for the return of Osborne Monnett, chairman of the publicity committee of the International Association for Smoke Prevention, to Louisville for another series of lectures. Mr. Monnett also has promised that he will be glad to assist the supervisor of the survey when this work is commenced.

## LEGAL NOTES

### A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

#### Delegation of Taxing Power—Public Purpose.

State ex rel. Trustees of La Crosse Public Library v. Bentley, Mayor, et al.—The power to tax cannot be conferred on a municipality or subordinate state agency for other than a public purpose.—Supreme Court of Wisconsin, 158 N. W. R., 306.

#### State Fire Marshal—Condemnation of Property—Justification.

Smith v. McCormick et al.—Unless the facts surrounding private property condemned by the state fire marshal were such as to properly invoke the police power, the act of the marshal did not protect him or the chief of a fire department acting upon his authority.—Supreme Court of Montana, 157 P. R., 1010.

#### Snow and Ice on Streets—Injury—Notice—Liability.

Gaffney v. City of New York.—There can be no liability on the part of a municipality for injuries on icy walk, unless a dangerous and unusual condition is shown, and actual notice of conditions or the lapse of sufficient time to charge the municipality with negligence.—Court of Appeals of New York, 112 N. E. R., 725.

#### Paving—Evidence of Fraud—Conclusiveness.

Rudolph S. Blome Co. et al. v. Herd.—An acceptance by the city of paving, where the character of the work and the departures from the specifications were such as to warrant an inference of fraud, or to show it to be substantially a different work from that contracted for, is not conclusive against the property owner.—Court of Civil Appeals of Texas, Ft. Worth, 185 S. W. R., 53.

#### Bonds—Amount—Legality.

Monroe, City Treasurer, v. Reeves.—Where a municipality issues bonds in different separate amounts for several purposes, some of which bonds are for municipal purposes authorized by law, and a severable amount of the bonds may not legally be issued by the city, the bonds that are legal may be sustained, and those that are illegal and severable may be declared invalid.—Supreme Court of Florida, 71 S. R., 922.

#### Ordinance—Application—Construction.

Clark v. Pacific Power & Light Co.—A city ordinance, providing that it should be unlawful to construct or maintain any wires at a less height than 35 feet in the clear above any part of the authorized grade of any street, sidewalk, alley, or public place within the limits of the city, referred only to such streets as the city had established or authorized the grade of by some affirmative act; i. e., by ordinance or some other equally formal act, evidenced in writing, or by actual improvement—the ordinance being penal and requiring strict construction.—Supreme Court of Washington, 157 P. R., 462.

#### Vacation of Street—Change of Grade—Maps.

In re Newton Avenue in City of New York.—Upon the filing of a section of a map by the commissioner of street improvements, pursuant to Laws 1890, c. 545, as incidental to the closing of a road, which action was ratified by Laws 1896, c. 712, showing Broadway as bounding a triangular tract of land on the east, discontinuing a road, and involving the easements in the part of the road so shown to be discontinued appurtenant to the tract, the fact that the elevation of the continued street was not the same as the elevation of a then existing street, and that the change of grade was contemplated was immaterial; the material facts being that the map showed the continuance of the existing street, and that it was open and in use for the entire width when the map was filed.—Supreme Court, Appellate Division, First Department, 159 N. Y. S., 478.



## NEWS OF THE SOCIETIES

### Calendar of Meetings.

**July 17-21.**—NORTH CAROLINA STATE FIREMEN'S ASSOCIATION. Annual convention, Raleigh, N. C.

**July 18-20.**—MICHIGAN STATE FIREMEN'S ASSOCIATION. Annual convention, Detroit, Mich.

**July 20-22.**—SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION. Annual convention, Ogdensburg, S. C.

**July 25-27.**—ILLINOIS FIREMEN'S ASSOCIATION. Annual Parade and Tournament, Kankakee, Ill.

**Aug. 7-9.**—CITY MARSHALS' AND POLICE CHIEFS' UNION OF TEXAS. Annual convention, Houston, Tex.

**Aug. 8-10.**—OHIO POLICE CHIEFS' ASSOCIATION. Annual convention, Cedar Point, O. Secretary, Ex-Chief James Stamberger, E. Cleveland, O.

**Aug. 8-11.**—DOMINION ASSOCIATION OF FIRE CHIEFS. Annual convention, Windsor, Ont. Secretary, James Armstrong, Kingston, Ont.

**Aug. 15-18.**—FIREMEN'S ASSOCIATION OF THE STATE OF NEW YORK. Annual convention, White Plains, N. Y.

**Aug. 16.**—CONNECTICUT FIRE CHIEFS' CLUB. Annual convention, Thompsonville, Conn.

**Aug. 16-17.**—CONNECTICUT STATE FIREMEN'S ASSOCIATION. Annual convention, Thompsonville, Conn.

**Aug. 21-27.**—PACIFIC COAST ASSOCIATION OF FIRE CHIEFS. Annual convention, San Diego, Cal.

**Aug. 22-24.**—UTAH STATE FIREMEN'S ASSOCIATION. Annual convention, Salt Lake City, Utah.

**Aug. 22-25.**—INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. Annual convention, Baltimore, Md. Secretary, Clarence R. George.

**Aug. 28-31.**—NATIONAL TAX ASSOCIATION. Tenth annual conference, Indianapolis, Ind.

**Aug. 29-31.**—LEAGUE OF CITIES OF THIRD CLASS IN PENNSYLVANIA. Seventeenth Annual Convention, Johnstown, Pa. Secretary, Fred H. Gates, City Clerk, Wilkes-Barre, Pa.

**Aug. 29-Sept. 1.**—INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. Annual convention, Providence, R. I. Secretary, James McFall, Roanoke, Va.

**Sept. 4-8.**—SOUTHERN APPALACHIAN GOOD ROADS ASSOCIATION. Ninth annual convention, Lexington, Ky. Secretary, Dr. Joseph Hyde Pratt, Chapel Hill, N. C.

**Sept. 6-9.**—LEAGUE OF AMERICAN MUNICIPALITIES. Annual convention, Newark, N. J.

**Sept. 13-15.**—NEW ENGLAND WATER WORKS ASSOCIATION. Convention, Portland, Me. Secretary, Willard Kent, Narragansett Pier, R. I.

**Sept. 13-15.**—WASHINGTON STATE ASSOCIATION OF COUNTY COMMISSIONERS. Annual meeting, Tacoma, Wash. Secretary, J. C. Hansen, Port Angeles, Wash.

**Sept. 18-20.**—ILLUMINATING ENGINEERING SOCIETY. Annual Convention, Philadelphia, Pa. Asst. Secretary, C. D. Fawcett, 29 West 39th street, New York City.

**Sept. 20-22.**—MASSACHUSETTS STATE FIREMEN'S ASSOCIATION. Annual convention, Gloucester, Mass. Secretary, D. Arthur Burt.

**Oct. 9-11.**—NATIONAL HOUSING ASSOCIATION. Annual meeting, Providence, R. I. Secretary, Lawrence Veller, 105 East 22d St., New York City.

**Oct. 9-13.**—AMERICAN ELECTRIC RAILWAY ASSOCIATION. Annual convention, Atlantic City, N. J. Secretary, E. B. Burritt, 8 West 40th street, New York City.

**Oct. 9-13.**—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Twenty-third Annual Convention, Robert Treat Hotel, Newark, N. J. Secretary, Charles Carroll Brown, 702 Wulsin Building, Indianapolis, Ind.

**Oct. 16-21.**—NATIONAL SAFETY COUNCIL. Fifth Annual Safety Congress, Detroit, Mich. Secretary, W. H. Cameron, Continental and Commercial Bank, Chicago, Ill.

**Oct. 17-20.**—AMERICAN GAS INSTITUTE. Annual meeting, Chicago, Ill. Secretary, G. G. Ramsdell, New York City.

**Oct. 24-27.**—AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Convention, Cincinnati, O. Secretary, Prof. Selikar M. Gunn, Boston, Mass.

**Nov. 15-16.**—NATIONAL CONFERENCE ON UNIVERSITIES AND PUBLIC SERVICE. Third annual conference, Philadelphia, Pa. Secretary, Edward A. Fitzpatrick, Box 380, Madison, Wis.

**Dec. 27-30.**—AMERICAN ECONOMIC ASSOCIATION. Annual meeting, Columbus, Ohio. Secretary, A. A. Young, Ithaca, N. Y.

**Dec. 27-30.**—AMERICAN STATISTICAL ASSOCIATION. Annual meeting, Columbus, O. Secretary, Carroll W. Doten, 491 Boylston street, Boston, Mass.

**Feb. 5-12, 1917.**—AMERICAN ROAD BUILDERS' ASSOCIATION. Seventh American Good Roads Congress and Eighth National Good Roads Show, Mechanics' Hall, Boston, Mass. Secretary, E. L. Powers, 150 Nassau street, New York City.

### Intermountain Good Roads Association.

The annual meeting of the Intermountain Good Roads Association was held at Ogden, Utah, June 13-14. Pocatello was selected as the 1917 convention city, Boise contesting the honor, and the following officers elected: Dr. H. M. Rowe of Ogden was elected president; Theodore Turner of Pocatello, vice-president, and James P. Casey, secretary.

Commissioner Miles L. Jones, mayor pro tem of Ogden, welcomed the delegates in behalf of the city, Judge J. A. Howell extended greetings in behalf of the county. President McCalla of the association in his address outlined the benefits that will accrue when the intermountain states are connected by a system of good highways. He said:

"By reason of her excellent roads, California has more foreign automobiles registered in that state than there are in all the intermountain states. Can you realize what that means to California? We are in our infancy in road building. To realize our best ambitions in the matter of highways we must call upon the government for aid."

Prof. William Peterson of the Utah agricultural college made an address on "The Relation of Horse, Load and Road," presenting so many facts of interest to delegates that they inquired as to whether they could get the address in full.

Among other things Professor Peterson declared that the average cost of transporting produce along roads in the United States was 23 cents per ton per mile. In Utah, he said, long hauls brought the cost to about 25 cents. Where there are improved roads the cost has been reduced to 13 cents and in Europe it is about 8 cents.

An interesting feature was the effort of H. C. Howard of Salt Lake to have the convention go on record as favoring a Utah gubernatorial candidate pledged to a permanent highway from Logan to Payson. This motion was overruled.

J. David Larson, secretary of the Salt Lake Commercial club, pointed out the benefits that will accrue if the state, through good roads, attracts automobile tourists. "It is better," he declared, "to get Eastern people to visit Utah than it is to send them highly attractive publicity matter."

Need of rigid supervision of the expenditure of funds set aside for road building purposes to avoid waste and mistakes, economy by constructing permanent roads rather than dirt roads that must be repaired continuously and the desirability of obtaining federal aid—these were the principal thoughts set forth by speakers at the final session.

Senator Reed Smoot sounded a keynote in his discussion of the Shackleford road bill, now in conference between the House and Senate, which carries an appropriation of \$75,000,000 to be placed at the disposal of states for the construction of highways. He declared every effort should be put forth to have this bill passed with the incorporation of the Jonathan Bourne plan of road building.

One set of resolutions adopted by the convention pledges the delegates to support the movement for an international highway from Mexico to Canada by way of Phoenix, Salt Lake, Boise and Helena. The highway would touch the Grand Canyon, Yellowstone and Glacier National parks and other scenic regions. It was estimated that it will require \$500,000 to complete the links of this proposed highway.

Another set of resolutions sets forth the desire of the association to have states get possession of public lands to be sold, that funds for road building purposes may be obtained.

### Municipal League of Indiana.

The twenty-sixth annual convention of the Municipal League of Indiana was held at Goshen July 11-13. Shelbyville was selected for the meeting-place of the 1917 convention, and the following officers were elected: President, H. Karl Volland, mayor of Columbus; first vice-president, Milo Feightner, city attorney of Huntington; second vice-president, Samuel F. Spohn, mayor of Goshen; third vice-president, Thomas J. Carmichael, mayor of Aurora; treasurer, F. G. McMahon, controller of Richmond; secretary, Stanley S. Jones, city clerk of Shelbyville. Mr. Volland was re-elected.

One of the important addresses of the afternoon session was delivered by Eben H. Wolcott, formerly a member of the state board of tax commissioners. He assailed the present system of taxation as unjust, saying that only about 40 per cent of all property pays the taxes.

The mortgage exemption law, he said, has grown to a point far in excess of what those who formed it and caused its passage ever thought it would, and thousands of people are now refusing to loan money on mortgages and investing it in non-taxable

bonds and securities that are easily hidden.

As a remedy for the prevailing condition, Mr. Wolcott urged that municipal officers go before the next session of the Indiana general assembly and insist upon the passage of an entirely new, just and reasonable tax law. Commenting on the seriousness of the situation, he forecasted that as a result of high taxes coming through small assessed valuations factories would avoid locating in certain cities.

John L. Taylor, of Crawfordsville, former president of the Indiana state board of health, addressed the convention on "Some Things to Be Guarded." He urged pure water supplies, modern methods of disposing of garbage, better sanitary regulations, and many other things as a precaution for health. Mayor Johnson, of Gary, Mayor Krueger of Michigan City, Mayor Gard of Frankfort, George U. Sturtevant, of Indianapolis, and others who were scheduled to speak did not come.

Speaking on "Constitutional Debt Limit," Fred N. Keller, mayor of South Bend, declared the present limit in Indiana is entirely too low and that it is interfering with cities owning their public utilities. The mayor submitted statistics to prove that the 2 per cent limit in Indiana is the lowest of any state in the Union. Colorado, he showed, has a 3 per cent limit, while in Illinois, Iowa, Maine, Missouri and West Virginia the maximum is 5 per cent. In Wisconsin, Georgia and Pennsylvania it is 7 per cent; in South Carolina, 8; and in New York, 10 per cent.

Mayor Keller proceeded on the theory that the law of 1881 fixing the constitutional debt limit at 2 per cent of the assessed value should be abolished and the maximum either made higher or the matter left entirely to the people of the respective cities to determine. The speaker showed that in South Bend the waterworks is the only public utility now owned by the city. He declared that if the electric light and

gas plants were municipally owned, thousands on thousands of dollars could be saved annually to consumers. The constitutional debt limit statute hinders development under present conditions, according to the reasoning of Mayor Keller.

Ralph W. Gaylor, mayor of Mishawaka, spoke on "Motor-Driven Fire Apparatus." He asserted that in his home town this system has been found to be not only satisfactory in a general way but very economical. Motorizing of all fire departments was urged by Mayor Gaylor. The loss by fire in Mishawaka, he said, had been materially reduced since the motor apparatus was adopted a few years ago. On no occasion had the motors ever failed to reach the scene of a fire.

David E. Ross, of Lafayette, who was

(Continued on page 85.)

## PROBLEMS CITIES ARE STUDYING WITH EXPERTS

The city of Arcadia, Fla., is to make extensions to its SEWER SYSTEM and WATERWORKS. Cravens & Kimmel, Parker Building, Arcadia, Fla., prepared the plans.

Plans and specifications for WATERWORKS to cost \$10,000 for the village of Miller, Neb., have been prepared by Charles F. Sturtevant, consulting engineer, Holdrege, Neb.

In making plans for a SEWER SYSTEM, Elkader, Ia., appointed M. Tschirgi & Son, 712 American Trust Building, Cedar Rapids, Ia., as engineers.

A mechanical water filtration and pumping plant is a contemplated improvement to the WATERWORKS of Medina, O., plans having been prepared by R. H. Hunter, 906 North Bever street, Wooster, O.

A complete WATERWORKS SYSTEM is to be constructed by the town of Sheridan, Mont., and plans and specifications for this project were designed by George E. Baker, consulting engineer, Whitehall, Mont.

The city of Kennedy, Tex., has plans and specifications for a WATERWORKS PLANT, consisting of triple pump, steel tank, and oil engine, which were prepared by M. Griffin O'Neil & Sons, Dallas, Tex.

The GARBAGE DISPOSAL problem of Kansas City, Mo., is becoming urgent and the board of health has an appropriation of \$500,000 for constructing the necessary plans. Rudolph Hering, of Hering & Gregory, 170 Broadway, New York City, has been employed by the board to investigate and report on the whole question.

Monticello, Wis., is to have a municipal LIGHTING plant and Harrison A. Smith, 33 Vrooman Building, Madison, Wis., made the plans.

Plans for extensions to the SEWER SYSTEM of Nickerson, Kans., have been prepared by Black & Veatch, 507 Interstate Building, Kansas City, Mo.

Specifications for improvements to the WATERWORKS of Takoma Park, Md., have been prepared by Harry Stevens, consulting engineer, Union Trust Building, Washington, D. C.

In making improvements to its WATERWORKS the city of Coshoc-ton, O., has had the services of Chester Fleming, Union Bank Building, Pittsburgh, Pa., in making the necessary plans.

A WATERWORKS SYSTEM, including distributing mains, pumping station, valve and hydrants, pumps and tank, has been designed for the village of Red Creek, N. Y., by H. C. Kittredge, 704 German Insurance Building, Rochester, N. Y.

The waterworks trustees of Evansville, Ind., are now considering a report on extension of the WATERWORKS system just completed by Alvord & Burdick, consulting engineers, Hartford Building, Chicago, Ill.

The local sewerage problems of the townships of Wilkes-Barre and Hanover, the borough of Ashley and part of the city of Wilkes-Barre are to be solved by the construction of a joint SEWERAGE SYSTEM and DISPOSAL PLANT. The township engineers are Boyle & Howe, and the plans are being prepared by Clyde Potts, consulting engineer, 30 Church street, New York.

Bantrell, Myron, has been appointed engineer and chemist of new sewage disposal plant at Irondequoit, Rochester, N. Y.

Bradbury, Charles T., chief of police of Revere, Mass., died July 7, aged 51.

Borrie, Christopher M., a member of the engineering firm of Borrie and Kreiner, engineers for several New Jersey towns, died June 29 at Newark, N. J. Mr. Borrie's firm began to do work in an official way for the West Hudson towns in 1873, and continued in that capacity in Harrison until this year, when it was succeeded by John J. Bracken. It has been employed by Kearny since 1873, except for three years, when a local engineer was engaged. The firm laid out nearly all the streets in West Hudson and last year supervised and laid out the Federal League baseball grounds and the additions to the large plant of the Crucible Steel Company, both in Harrison.

Felder, L. S., has been appointed highway commissioner for the second district, Pike county, Mississippi.

Hannagan, Paul, formerly street commissioner and director of engineering in Lawrence, Mass., has been appointed a consulting paving engineer of Boston.

Hunt, Henry H., has resigned as chief of police of Salisbury Beach, Mass., and Charles Jackson has been appointed acting chief.

In the election of five commissioners to take the place of the present mayor and council of Montclair, N. J., Louis F. Dodd, E. Mortimer Harrison, John Picken, John C. Barclay and Charles G. Phillips were chosen.

Millmore, John F., has been appointed chief of police of Waltham, Mass., succeeding Thomas F. Lyons, who has resigned.

Moore, Major Edward R., chief of police of Roanoke, Va., died July 10, after an illness of three months.

Stevenson, W. L., has been elected chief of the Pottsville, Pa., fire department.

## PERSONALS



## NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

### PIPE STREET FLUSHER.

#### Portable Pipe Line Equipment for Cleaning.

The B. M. E. portable pipe line pavement flusher is of a rather novel type—entirely different from the usual horse or motor drawn tanks. It consists of special sections of pipe joined together which are moved intact from one hydrant to another after disconnecting the hydrant hose, by simply pulling the entire line along the street.

The flusher consists of units, each of which, with its flexible hose connection, is 16 feet long. The length of a set is determined by one-half the average distance between hydrants; for example, 12 units are required if the hydrants are about 400 feet apart. Each unit consists of one 15-foot length of galvanized wrought-iron pipe, mounted on iron wheels 8 inches in diameter, a fixed pivotally mounted discharge nozzle, set horizontally, 10 inches from the pavement and a one-foot flexible hose end connection. The necessary fittings consist of a two-inch transfer nipple at one end of each unit, a galvanized iron tee 2x1½ inches and a bronze metal 1½-inch swivel joint in combination with a bronze metal shut-off nozzle. One of the end units in each set has two swivel joints and combination nozzles, giving the advantage of cleaning a distance equal to another unit. The several units are connected with two-inch pipe thread brass couplings on one-inch or two-inch flexible hose.

In operating, the apparatus is usually moved along by the nozzle man and the gutter sweeper who follows to thoroughly clean the gutters and pile up the dirt so as to keep it out of the sewers as much as possible. The flexible intermediate connections enable the operator to move the apparatus intact around street corners. In Buffalo,

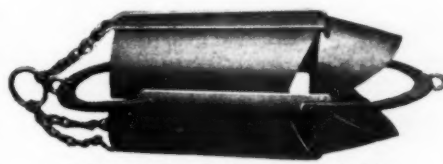
N. Y., where this flushing system is used exclusively, a truck distributes the various sets in the morning and calls for them at the end of the day. Once connected up for work, they remain so for the day. For carrying, the several units are disconnected and set one on the other on the truck.

After the hydrant connection is made, the operator turns on one of the end valves (depending on the grade, as the washing is, of course, always

it is renewable in sections, and the whole outfit does not have to be scrapped at once. The flushing is not harmful to the pavement surface as the low set horizontal nozzle prevents damage to the pavement material or binder.

It has been found that the whole width of a street for a distance of 240 feet may be cleaned under ordinary conditions in five to seven minutes.

The accompanying illustration shows the flusher at work. It is made by the Buffalo Municipal Equipment Company, 503 Mutual Life Building, Buffalo, N. Y.



KUHLMAN SEWER CLEANING BUCKET.

done down grade) and cleans to a point ahead of the next valve. He then walks ahead, opening each valve in turn. The nozzles being pivotally mounted can be quickly and easily turned in a complete circle. The operator has at all times perfect control of the stream and can shut it off at will with the valve wrench which he carries. No water, therefore, is wasted with this system, since the valve is shut when the given distance is thoroughly cleaned and while the operator is walking to the next point. In Buffalo the gutter man piles up the dirt as it is driven to the curb, but, if desired, the flusher will drive all the dirt along the gutter to the sewers.

When flushing streets having car tracks, the apparatus is placed a safe distance from the outer rail. On streets without tracks, the pipe line is set in the middle of the street. Hydrant hose protecting boards are always used to allow free passage of traffic. The traffic is never obstructed.

Because the apparatus is in sections

### SEWER CLEANING MACHINE

#### With Expansion Buckets of Special Design.

The Kuhlman sewer cleaning machine consists essentially of a cleaning bucket drawn through the sewer by a special type windlass and cable and guided in the manhole by a trolley jack. The apparatus is the result of many years' experimenting by John F. Kuhlman, who for the past ten years has been commissioner of public works of Hammond, Ind., in charge of the street and sewer department.

The bucket is not necessarily drawn from one manhole to the other, but is only drawn into the sewer far enough to be filled with the deposit, and when it is full it is drawn back out of the manhole in which it was inserted. The bucket is so constructed that when the reverse pull is made, the jaws close up tight and retain anything that may have entered the bucket in its forward movement. In this way time is saved when the deposit is near the manhole by reversing the pull to the shortest distance to the manhole. The bucket will load up with gravel, mud, rags, tar, paper and brickbats, and with its sharpened jaws it will cut and pull out roots.



THE B. M. E. PIPE LINE FLUSHER AT WORK.

The patented trolley jack is so constructed that the buckets will slide up out of the sewer without the cable cutting into the sewer or brickwork. When the bucket strikes the arm it releases a hook and guides the bucket to the center of the manhole and up to the surface. The jack makes it possible to do all the cleaning from above the surface, thus eliminating the wet and disagreeable work.

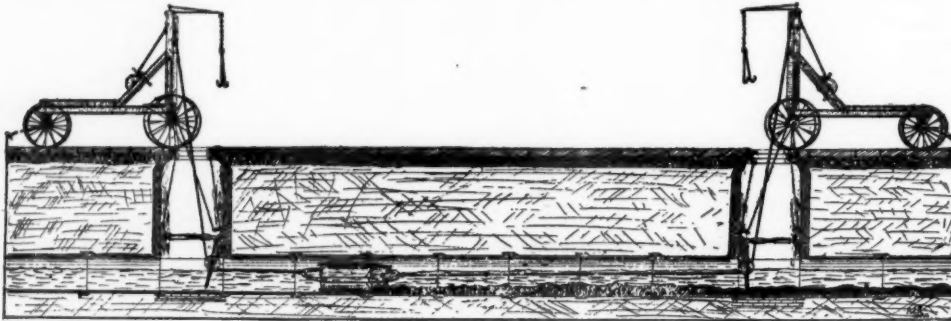
The outfit consists of two steel

**The Federal Motor Truck Company,** Detroit, Mich., announces the appointment of V. K. McBride as assistant sales manager of the company. Mr. McBride has been in the sales department for over two years. The appointment of H. A. Conlon as field sales manager has also been announced. Mr. Conlon has been a special sales representative of the company for some time and his new duties will take him into various sections of the country

the White sales force, has joined the sales department of the Federal Motor Truck Company as a traveling district representative in western territory. Mr. Rosenberg is one of the oldest salesmen in the truck industry, having built one of the first commercial vehicles in the country over sixteen years ago.

**The Goodyear Tire & Rubber Company,** Akron, Ohio, announces the following appointments: M. D. Montgomery, who has been acting manager of the Denver district during the illness of the late S. E. Gillard, has been confirmed as manager of that district. F. C. Moyer, who has been in charge of Goodyear's Des Moines branch, becomes manager of the Minneapolis branch vice G. H. Barmore, who has been appointed manager at Milwaukee. F. W. Telford, former supervisor of motor truck sales at Chicago, becomes manager of the Des Moines branch. T. J. Fitzgerald will fill the managership of the El Paso branch left vacant by the death of G. F. Dennis.

**United States Gets Bids on 2,400 Cars and Trucks.**—Bids have been received by the quartermaster's department for supplying the government with 2,000 trucks, half of 1½-ton capacity and half of 3-ton size. Simultaneously bids have been made for supplying 400 cars in touring and roadster bodies intended for dispatch carrying and for moving officers rapidly from point to point. The truck order is estimated to be worth about \$15,000,000, and the order for touring cars about \$400,000. The Ford Motor Co. has made the lowest bid for the touring cars, offering them at \$440 each,



SEWER CLEANING MACHINE IN OPERATION.

trucks with hoist windlass and swinging loading boom, two trolley jacks, two ¾-inch wire cables 300 feet long, one each of five different sizes of buckets—6, 8, 12, 15 and 17-inch—for cleaning all sizes of sewers from 8 inches up, and one 10-foot hand hook.

The machine has been widely and successfully used in Gary, Ind.; East Chicago, Ind.; Hammond, Ind.; Indiana Harbor, Ind., and West Hammond, Ill.

The accompanying illustrations show the bucket, the windlass and a diagram of the method of cleaning. The machine is made by the Champion Potato Machinery Co., Hammond, Ind.

## INDUSTRIAL NEWS

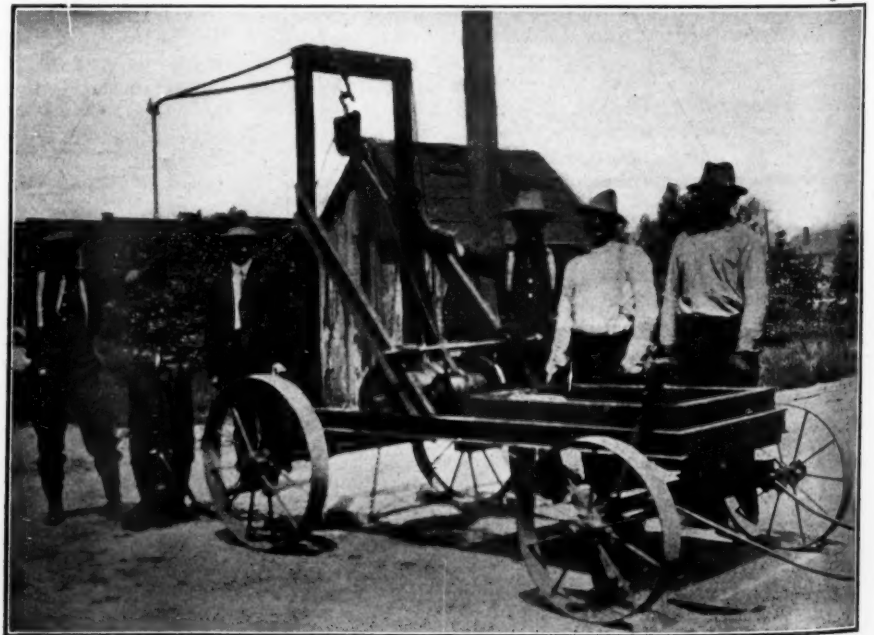
**Cast Iron Pipe.**—Chicago—Pipe companies are taking a very good miscellaneous tonnage, one order of 1,100 tons being booked. For municipal purposes buying is very limited, current inquiry including 250 tons for Lima, O., 200 tons for Berwyn, Ill., and 130 tons of special pipe for St. Louis. Quotations: 4-inch, \$33.50 to \$34; 6-inch and larger, \$30.50 to \$31; Class A, \$1 extra. Birmingham—The pipe market is dull, but the foundries had good orders on their books before the lull set in. Operations continue at the pace of the past several months. Quotations: 4-inch, \$28; 6-inch and up, \$25; 16-foot lengths, \$1 extra. New York—Bids were taken July 12 for a pipe-laying job for Perth Amboy, N. J., involving 15,320 feet of 30-inch pipe, 11,000 feet of Class B and the remainder of Class C—a total of about 2,700 tons. Prices are unchanged. Quotations: 6-inch, Class B and heavier, \$30.50; Class A, \$31.50.

**Lead.**—Lead has shown a little activity but prices are lower. Quotations: New York, 6.45 cents; St. Louis, 6.25.

to work with the district sales representatives of the Federal company.

An enthusiastic sales conference was held at the Federal Motor Truck Company the week preceding the World's Salesmanship Congress at Detroit, when the various district sales representatives of the company met with director of sales J. F. Bowman to discuss sales plans for the next few months. Every man present brought optimistic reports of the outlook for truck sales in his territory. The following district salesmen were present at the conference: L. C. Long, L. W. Phillips, J. I. Martin, E. D. Jones, W. S. Hill, R. S. Smith, J. A. Holihan and H. M. Rosenberg.

H. M. Rosenberg, formerly branch manager of the White Company at St. Louis, and for five years a member of



KUHLMAN SEWER CLEANING MACHINE.



f. o. b. Detroit, and undertaking to complete delivery within one week from receipt of order. Another offer is of 400 Elkharts at \$975 each, the company stating that it has a large stock on hand. The Colt-Stratton Co. offers 400 Dodge cars at \$785, guaranteeing shipment to be started one day after receipt of order and completed within four days, thus beating the Ford delivery offer by two days. Willys-Overland offers its six-cylinder model for \$973.25 or the Willys-Knight at \$956.25. Packard offers the standard seven-passenger touring car for \$2,475, and has a hundred for immediate delivery. Maxwell offers forty cars per day at \$500 each, f. o. b. New York, or \$475 each, f. o. b. Detroit. Other bidders include Reo, King, Velie, Hupmobile and Studebaker, some of these bids being made direct and some through dealers.

On the truck order there have been a very large number of bids, since it is impossible for any one firm to hope to execute the whole order. It is obvious that if this quantity was required hurriedly it would be necessary to buy in tens and twenties from almost every maker. One of the bidders offering the most rapid delivery is the Four Wheel Drive Auto Co., offering fifty-six 3-ton chassis by the end of August and stating that it can speed up at the rate of 224 per month. The Chicago Pneumatic Tool Co. has 100 trucks of 1½-ton capacity for immediately delivery and can produce 150 per month. White offers two trucks per week, the Locomobile five trucks in 28 days, and thirty in the following three weeks. Pierce-Arrow offers 700 2-ton chassis, 300 to be delivered by Jan. 1, 400 by April 1 and ten per day thereafter. Packard bid for thirty-three 1½-ton in 2 days after Aug. 1, the subsequent deliveries at the rate of thirty-three each 30 days and also for a certain number of 3-ton trucks. Jeffery has a 1½-ton bid, delivery at the rate of seven per day. Most of the other bids are for small quantities and too numerous to mention. It is noteworthy that the specifications for the trucks were finally drawn up after consultation with a committee brought together by the Society of Automobile Engineers, including prominent engineers. Several meetings attended by government representatives were held at the S. A. E. office and the specifications as drafted originally were modified in some respects so as to enable greater output in a short time.

## NEWS OF THE SOCIETIES

(Continued from page 82.)

to speak on "Home Rule for Cities," was not present and his address was read by W. M. Crockett, of Lafayette.

E. H. Fory, vice-president of the Farmers Trust Company, of Indianapolis, who was announced for an address on "Basis of Classification of Cities on Fire Insurance," did not reach the city, and the subject that had been assigned

him was discussed in an informal manner.

L. Drew Goddard, city engineer of Laporte, spoke on "Five Salient Features of City Civil Engineering." Frank Randall, city engineer of Fort Wayne, and A. D. Moffett, who is now serving as city engineer of Elwood, participated in the discussion.

### Montana State Firemen's Association.

The twenty-seventh annual convention of this association was held at Butte, Mont., July 3-5. Dillon was chosen for the next meeting-place, and the following officers were elected: President, Art J. Baker, of Lewistown; vice-president, Fred Martin, of Butte; second vice-presidents—S. J. Enswiler, Ekalaka; William Tidball, Miles City; R. Russell, Stevensville; Ed Hammond, Hamilton; Dan Smith, Philipsburg; Fred Stanley, Great Falls; Harry Rush, Chinook; James Walker, Virginia City; A. A. Elliott, Dillon; Nelson Lane, Red Lodge; J. H. Haley, Bozeman; M. B. Pay, Manhattan; George E. Thomas, Kalispell; L. B. Knight, Whitehall; George L. Lapp, Dublin Gulch; E. J. Baker, Lewistown; P. F. Loffnes, Missoula; J. W. Scott, Boulevard; Jerry Hurley, Walkerville; George Worland, Havre; E. D. Ayers, Glendive; A. E. Ecklund, Anaconda; W. R. Evans, Roundup; O. P. Chisholm, East Helena; Mike Curnow, Williamsburg; E. M. Nelson, Billings; J. P. Wilde, Whitefish; secretary, Simon Behan, of Butte; treasurer, Ed Land, of Butte; directors—Chief George Dewar, of Havre; C. W. Robinson, of Dillon, and W. G. Alexander, of Bozeman; legislative committee—C. W. Robinson, of Dillon. The committee now consists of C. W. Robinson, John C. Bebb of Lewistown and J. M. Higgins of Hamilton.

The convention was welcomed to the city by Mayor Charles H. Lane, and addresses were made by Lieutenant-Governor W. W. McDowell, J. Bruce Kremer, Assistant City Attorney J. A. Groenveld, and others. The workingmen's compensation law as it applies to firemen was discussed, as were other matters of interest to fire-fighters.

A most excellent paper was prepared by Chief Fred Martin of the Butte department and read by Ed Land. His subject was "The Disability Act of the State," and in the discussion which followed the convention decided that the law ought to be so amended as to include small unincorporated towns.

The following papers were also read: "Advantages and Disadvantages of Substitute House Bill No. 13," by Gerald C. F. Beach, of Lewistown; "Power and Influence of State Associations by Organization," by H. L. Fitton, of Lewistown; "On Tax to Provide Fire Apparatus," by W. C. Forgey, of Miles City.

The night session was called to order in the city council chambers at 6:30 o'clock by the president.

A paper on "The Power and Influence of Organization" was read by Fred Stanley, of Great Falls.

The statement by Chief Charles Collins of Anaconda that Montana ought to have the two-platoon system governing fire companies created by statute and that legislation to that effect be secured was greeted by applause.

President Baker stated that only the legislation endorsed by the association would be submitted to the legislature and the members were instructed to draw up any changes in the laws they desired to have made in the state legislature in the form of resolutions and submit the same to the legislative committee in order for the association to consider the same.

Papers were also read on the following subjects: "Civil Service as Applied to Montana Fire Departments," by Ed J. Baker, of Lewistown; "Proposed Changes of Law Governing Fire Protection," by George E. Thomas, of Kalispell; "Fire Escapes for Hotels, Theatres, etc.," by J. W. Hanley, of Lewistown, read by Simon Behan, of Butte.

Most of the discussion of this subject was on the moving picture houses and the best method of rendering them absolutely safe to the public.

W. L. Harnan, of Butte, a member of the Board of Fire Underwriters of the Pacific, talking on the preceding paper, said:

"The benefit of this association is much more far-reaching than the financial remuneration. One of the most material benefits which is or could be derived is that of preventive measures which can be taken to compel the construction of buildings in a manner to prevent the occurrence of fires."

He suggested that the office of fire marshal be placed on a civil service basis and filled by a competent fireman to be recommended by the Montana State Firemen's Association.

While the Butte firemen and those of some of the other larger cities of the state are under the two-platoon system, many of the remaining cities compel the firemen to be on duty the full twenty-four hours; and in order to remedy that condition a resolution was passed requesting the passage of a bill requiring that no fireman be on duty more than twelve hours per day in first and second class cities.

### League of Third Class Cities of Pennsylvania.

A municipal parade will be one of the features of the convention of the League of Third Class Cities which meets at Johnstown, Pa., August 29, 30 and 31. The full program of the convention is being drafted after a meeting of the executive committee held at Johnstown.

The committee on the convention hall has selected the new Fort Stanwix Hotel for the convention sessions. The preliminary plans for the parade of the departments of the city government include all fire-fighting equipment. The surrounding boroughs will likewise be invited to send their equipment and apparatus.

# ADVANCE CONTRACT NEWS

## ADVANCE INFORMATION BIDS ASKED FOR

## CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Ky., Albany	.....noon, July 22..	11.25 miles highway improvement.....	J. G. Sloan, Clerk, Co. Court.	
Ind., Greencastle	.....2 p.m., July 22..	2 miles of gravel road.....	J. M. Allen, County Auditor.	
Ky., Bowling Green	.....noon, July 22..	State aid road work; \$60,000 available.....	M. H. Crump, Road Engr.	
Conn., Stonington	.....noon, July 22..	Cement sidewalks.....	W. A. Wilcox, 41 W. Broad St., Westerly, R. I.	
O., Cleveland	.....July 22..	improving Richmond Road.....	E. G. Krause, Clk, Co. Comrs.	
O., Columbus	.....July 22..	1 1/4 mile brick or macadam pavement.....	Homer Weeden, Engineer.	
Ida., Idaho Falls	.....July 22..	Paving several streets.....	City Clerk	
N. J., Camden	.....8 p.m., July 24..	44,740 sq. yds. concrete and 25,377 sq. yds. waterbound macadam road; 3,000 cu. yds. of excavation; reinforcement for road.....	J. J. Albertson, Boro. Engr., Audubon, N. J.	
Mass., New Bedford	.....noon, July 24..	\$95,000 creosoted wood paving blocks.....	W. P. Hammersley, Supt. of Streets.	
Pa., Washington	.....July 24..	Resurfacing with concrete.....	T. J. Underwood, Controller.	
Mich., Charleston	.....7 p.m., July 24..	Constructing gravel road.....	A. D. Schreckengast, Twp. Clerk.	
Fla., Arcadia	.....July 24..	158,000 sq. yds. pavement, curb and gutter.....	Cravens & Kimmel, Engrs.	
Mich., Pontiac	.....1 p.m., July 24..	2 miles concrete road.....	County Rd. Comr's.	
Minn., St. Paul	.....10.30 a.m., July 24..	Grading, curbing and improving several streets.....	H. W. Austin, Pur. Agent.	
Pa., Kittanning	.....July 24..	Paving.....	Boro Council.	
Wash., Olympia	.....2 p.m., July 24..	1.3 mile gravel surfacing.....	Jas. Allen, State Hwy. Comr.	
Wash., Seattle	.....11 a.m., July 24..	Constructing roads.....	Byron Phelps, Clk, Co. Comrs.	
N. Y., New Brighton	.....noon, July 24..	3,600 sq. yds. gran. block pav't, sidewalks and curbs.....	C. D. Van Name, Boro Pres.	
N. J., Glen Ridge	.....8 p.m., July 24..	24,000 ft. curb and gutter.....	J. A. Brown, Boro Clerk.	
N. J., Fairview	.....July 24..	18,000 sq. yds. hard surface pavement.....	Boro. Clerk.	
O., New Lexington	.....July 24..	Improving Madison street.....	Village Clerk.	
Ala., Wetumpka	.....July 24..	Doing road work for one year.....	M. D. Still, Probate Judge	
Minn., Mora	.....July 24..	Cleaning, grubbing and grading two new roads.....	R. W. Wood, Town Clerk, Hay Brook, Minn.	
Ia., Dubuque	.....8 p.m., July 24..	Pav. with wood blocks; 600 ft. of stone curb and 67,000 sq. yds. brick pavement.....	J. J. Shea, City Recorder.	
N. D., Williston	.....8 p.m., July 24..	Grading and graveling several streets.....	J. A. Schaezel, Auditor.	
Pa., Etna	.....4 p.m., July 24..	Grading, curbing and paving several streets.....	J. C. Armstrong, Boro Clerk.	
Pa., St. Marys	.....2 p.m., July 25..	3,170 sq. yds. brick pav't and 3,200 ft. curb and gutter.....	W. C. Hirn, Boro Engineer.	
La., Amite	.....10 a.m., July 25..	Constructing 20 miles of road.....	J. E. Kerrigan, Hammond, La.	
N. J., Somerville	.....July 25..	Road construction.....	J. Doughty, County Engr.	
O., Toledo	.....July 25..	Paving 20 streets and alleys, cost \$230,000.....	H. C. McClure, Comr. Engr'g.	
Mont., Great Falls	.....July 25..	17,500 sq. yds. of pavement, cost \$43,500.....	City Engineer	
Neb., Grand Island	.....July 25..	1,700 ft. concrete road.....	G. E. Neumann, Co. Clerk.	
Ark., Paragould	.....2 p.m., July 25..	9,000 ft. concrete curb and gutter.....	W. R. Heagler & Son, Engrs., Potosi, Mo.	
N. J., West Long Branch	.....8 p.m., July 25..	Unloading, carting and spreading gravel.....	J. W. Seaman, Boro Engineer, Record Bldg., Long Branch, N. J.	
N. Y., Peekskill	.....8 p.m., July 25..	Paving.....	A. E. Kruger, Clerk, Bd. Trus.	
Pa., Emporium	.....2 p.m., July 25..	25,450 sq. yds. brick pav't, 11,800 ft. coner. curb and 1,050 ft. reset stone curb; 6,300 cu. yds. excavation.....	F. F. Brady, Boro Engineer.	
N. J., Trenton	.....July 25..	Furnishing heavy asphalt road oil.....	T. Tobish, Co. Engr.	
O., Ironton	.....noon, July 25..	Paving with concrete.....	Director of Pub. Service.	
N. J., Paterson	.....July 26..	32,500 sq. yds. macadam and bit. con.....	G. W. Botbyl, Clerk Board Freeholders	
Pa., Lebanon	.....5 p.m., July 26..	5,500 sq. yds. hard pavement.....	P. A. Volcker, City Engr.	
N. Y., New Brighton	.....noon, July 26..	5,700 cu. yds. grading and filling.....	Engr., Bur. of Engineering.	
N. Y., New York	.....2 p.m., July 26..	Paving with sheet asphalt and granite block.....	M. M. Marks, Boro Pres.	
O., Cleveland	.....noon, July 26..	Grading, curbing and paving streets.....	Com'r. of Engineering.	
Wis., New Glarus	.....2:30 p.m., July 26..	4,200 sq. yds. reinf. coner. pav't and 1,900 ft. curb and gut.....	E. J. Hoesly, Village Clerk.	
N. D., Bowbells	.....2 p.m., July 26..	Grading and bridge work.....	G. K. Melby, Co. Aud.	
Ind., Indianapolis	.....10 a.m., July 26..	Grading and graveling.....	Board of Public Works.	
Wis., Fond du lac	.....3 p.m., July 26..	Paving Scott street.....	Board of Public Works.	
N. J., Morristown	.....July 26..	Constructing section of road.....	Bd of County Freeholders.	
Ind., Evansville	.....10 a.m., July 27..	Constructing and improving roads.....	C. P. Beard, Co. Aud.	
La., Lake Charles	.....July 27..	4,700 sq. yds. vertical fibre brick.....	E. L. Gorham, City Engr.	
Ind., Winchester	.....10 a.m., July 27..	Grading, draining and paving roads.....	C. E. Tillson, Co. Auditor.	
Utah, S. Lake City	.....10 a.m., July 27..	Paving with concrete and bitulithic.....	S. Q. Cannon, City Engr.	
N. J., Newark	.....3.30 p.m., July 27..	370,000 cu. yds. of embankment.....	M. R. Sherrerd, Chief Engr.	
S. D., Madison	.....8 p.m., July 27..	Paving alleys with hard surface pavement.....	Wm. Rae, Clerk.	
N. J., Rutherford	.....8:15 p.m., July 28..	Laying asphalt macadam pavement.....	F. A. Stedman, Boro Clerk.	
Pa., Glen Lyon	.....7 p.m., July 28..	Draining and draining road.....	W. O. Davis, Twp. Secy.	
N. J., Rutherford	.....July 28..	6,200 sq. yds. asphalt macadam.....	R. M. Watson, Engr.	
Miss., Lexington	.....July 28..	Constructing 26 1/2 miles of highway.....	J. H. Fuqua, Chancery Clerk	
O., Columbus	.....noon, July 28..	Approaches to bridge; 650 sq. yds. mac. rip-rap, etc.....	John Scott, Clerk, Co. Comrs.	
Ind., Indianapolis	.....10 a.m., July 28..	Constructing three gravel roads.....	L. K. Fesler, Co. Aud.	
O., Bowling Green	.....noon, July 28..	Grading, paving and curbing streets and alleys.....	J. E. Baird, Service Director.	
Ind., Greenfield	.....10 a.m., July 28..	Constructing 5 gravel roads.....	H. J. Rhue, County Auditor.	
Ind., Indianapolis	.....10 a.m., July 28..	Grading and paving several streets.....	Board of Public Works.	
Ind., Peru	.....10 a.m., July 29..	Constructing gravel and concrete roads.....	F. K. McElheny, Co. Aud.	
Ind., Muncie	.....10 a.m., July 29..	Two Tarriva macadam roads.....	F. M. Williams, Co. Auditor.	
Kan., Olathe	.....July 29..	Macadamizing on Abbott road.....	G. Pike, Co. Engineer.	
Ind., Greenfield	.....10 a.m., July 29..	Large quantities of crushed stone.....	County Auditor.	
Miss., Corinth	.....July 31..	16 miles of gravel road.....	N. C. Rinehart, Engr.	
Ala., Evergreen	.....Aug. 1..	Road construction.....	Road Commissioners	



## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind., South Bend	10 a.m., Aug.	1.. Paving alleys	Board of Public Works.	
O., Dillonvale	Aug.	1.. Paving two streets	Martin Canfield, Clerk.	
O., Wash't'n Court House	Aug.	1.. Grading and paving four streets	B. R. Jacobs, Engineer.	
N. J., Asbury Park	Aug.	1.. Laying sidewalks and curbs	City Clerk.	
O., Shaker Heights	Aug.	1.. Improving several streets	B. W. Willard, Engr., Marshall Bldg., Cleveland	
Ark., Helena	Aug.	1.. Two miles concrete road, cost \$24,000	Wynne Engineering Co.	
Mont., Billings	Aug.	1.. Laying bituminous pavements	E. M. Snackenberger, City Engineer.	
Ala., Guntersville	Aug.	1.. Drain, grade and gravel four miles of road	County Commissioners.	
Ind., Gary	Aug.	1.. First-class pavement on several streets	W. J. Fulton, City Engr.	
Minn., Popple Grove	2 p.m., Aug.	1.. Grading, ditching and installing culverts	W. F. Bellcourt, Town Clerk.	
S. D., Clark Lake	2 p.m., Aug.	1.. Grading roads	J. M. Wold, County Auditor.	
Mo., Albany	Aug.	1.. Paving 30 blocks	N. E. Holden, City Clerk.	
Ala., Ashville	Aug.	2.. Grading and surfacing with chert gravel	W. S. Keller, State Hwy. Engineer, Montgomery.	
Pa., Plains	7.30 p.m., Aug.	3.. Grading, curbing and brick paving	Jas. A. Devlin, Secy. Bd. Commissioners.	
Ind., Richmond	11 a.m., Aug.	3.. Constructing three roads	L. S. Bowman, Co. Aud.	
W. Va., Fairmont	noon, Aug.	3.. 20,500 tons limestone, 102,000 sq. yds. brick and 32 miles road improvement	A. G. Martin, County Clerk	
Ind., Columbus	10 a.m., Aug.	3.. Constructing gravel road	W. H. Scott, Co. Aud.	
Ind., Indianapolis	10 a.m., Aug.	4.. Paving several streets	City Engineer.	
Ind., Muncie	10 a.m., Aug.	5.. Constructing gravel road	F. M. Williams, Co. Aud.	
Ind., Indianapolis	10 a.m., Aug.	7.. Paving several streets	City Engineer.	
Ariz., Miami	10 a.m., Aug.	7.. Constructing Miami-Gibson highway	County Clerk.	
Ind., Nashville	1 p.m., Aug.	7.. Constructing two gravel roads	Omer Morrison, Co. Aud.	
Fla., Deland	Aug.	7.. 375,000 sq. yds. hard surf. pav't, curbs, bridges, etc.	J. B. McCrary Co., Atlanta, Ga.	
Ind., Jasper	2 p.m., Aug.	7.. Constructing 7 miles macadam road	J. H. Seng, Co. Aud.	
Ind., Cannelton	1 p.m., Aug.	7.. Constructing stone road	M. C. Conway, Co. Aud.	
Ind., Kentland	2 p.m., Aug.	7.. Constructing macadam road	S. R. Sizelove, Co. Aud.	
Mex., Albuquerque	Aug.	7.. Curbing and paving 8 blocks with bituminous materials	Thos. Hughes, City Clerk	
Ida., Lewiston	Aug.	7.. 2,760 sq. yds. concrete pavement, 13,400 sq. ft. sidewalk and 3,650 lin. ft. of curb; storm sewers	City Engineer	
Ind., English	2 p.m., Aug.	7.. Stone or similar road construction	J. D. Enlow, Co. Aud.	
Ind., Greensburg	1 p.m., Aug.	7.. Constructing road	J. C. Barbe, County Auditor.	
Ind., Brownstown	2 p.m., Aug.	7.. Constructing macadam road	Albert Luedtke, County Aud.	
Mich., Pontiac	Aug.	7.. Paving two streets	W. J. Fisher, Engr.	
O., Cleveland Heights	Aug.	7.. Paving, curbing and sidewalks	F. A. Pease Engrs. Co., Marshall Bldg., Cleveland, O.	
Ind., Newport	10 a.m., Aug.	7.. Gravel or macadam roads	Roy Slater, Co. Aud.	
Ind., Jeffersonville	10 a.m., Aug.	7.. Grading and paving with crushed stone	G. W. Stoner, Co. Auditor.	
Ala., Birmingham	Aug.	7.. Constructing 14 miles county road	Geo. H. Clark, County Engr.	
Md., Baltimore	Aug.	7.. Paving several streets, cost \$21,000	R. K. Compton, Chmn. Paving	
N. J., Morristown	10 a.m., Aug.	7.. 19,800 sq. yds. Amesite pavement	F. S. Smith, Co. Engineer.	
N. Y., Albany	1 p.m., Aug.	7.. Constructing state highways	E. Duffey, State Hwy. Comr.	
O., Port Clinton	August	8.. Concrete paving and curbing; cost, \$10,000	W. H. Williamson, Vil'ge Clk.	
Ind., Lebanon	10 a.m., Aug.	8.. Constructing county road	Cleve Goodwin, County Aud.	
Ind., Valparaiso	2 p.m., Aug.	8.. 2.51 miles gravel road	C. A. Blachley, County Aud.	
Ind., Albion	2 p.m., Aug.	8.. Constructing two gravel roads	G. A. Young, Co. Aud.	
Ind., Madison	1 p.m., Aug.	8.. Construction of two roads	Chas. S. Dabler, Co. Aud.	
Ind., Knox	noon, Aug.	8.. Gravel road construction	Chas. Weninger, Co. Aud.	
Ind., Goshen	1 p.m., Aug.	8.. Constructing brick road	A. R. Bemenderfer, Co. Aud.	
O., Greenfield	noon, Aug.	8.. Three-quarter-mile brick, bitulthic or tarvia road	E. M. Conner, Village Clerk.	
N. D., Bowbells	2 p.m., Aug.	8.. Grading and concrete work	G. K. Melby, Co. Aud.	
Ind., Rensselaer	2 p.m., Aug.	8.. Constructing stone roads	J. P. Hammond, Co. Aud.	
Wash., Republic	Aug.	8.. Constructing permanent highways	W. T. O'Connell.	
Ind., Rochester	2 p.m., Aug.	8.. Reconstructing township road	E. A. Smith, Co. Aud.	
Ind., Kokomo	10 a.m., Aug.	8.. One mile of gravel road	W. L. Benson, Co. Aud.	
Ind., Indianapolis	10 a.m., Aug.	9.. Paving seven blocks	City Engineer.	
Ind., Shelbyville	10 a.m., Aug.	9.. Constructing several roads (10 miles)	F. W. Fagel, County Auditor	
W. Va., N. Martinsville	noon, Aug.	9.. 41,000 sq. yds. of brick; 15,000 tons limestone	S. Myers, County Clerk	
Ind., Warsaw	10 a.m., Aug.	9.. Constructing gravel road	V. D. Mock, Co. Aud.	
Ind., Peru	noon, Aug.	9.. Constructing gravel and concrete road	F. K. McElheny, Co. Aud.	
Ind., Columbia City	10 a.m., Aug.	9.. Constructing several roads	T. A. McLaughlin, Co. Aud.	
Mo., Fulton	Aug.	10.. 2,200 sq. yds. brick pav't, 1,200 ft. concrete curb and 1,600 sq. yds. grading, oiling and rolling	F. E. Baker, City Engineer.	
Ind., La Porte	10 a.m., Aug.	10.. Constructing three roads	F. A. Hausheer, Co. Aud.	
W. Va., Elkins	Aug.	10.. 19 miles road improvement	P. B. Bloomfield, Chief Engr.	
Ill., Springfield	Aug.	11.. Curbing and paving with brick; cost, \$75,000	W. D. Seeley, City Engineer.	
Ala., Birmingham	Aug.	14.. 14 miles road construction	G. H. Clark, Co. Engineer.	
Ind., Indianapolis	10 a.m., Aug.	14.. Paving several streets	City Engineer.	
Ala., Bay Minette	Aug.	15.. Constructing section of Delta highway	J. M. Garrett, Co. Engineer.	
Ind., Indianapolis	10 a.m., Aug.	16.. Grading and paving streets	Board of Public Works.	
Ind., Indianapolis	10 a.m., Aug.	18.. Grading and paving Pleasant street	Board of Public Works.	
Utah, Salt Lake City	Aug.	20.. Concrete roads; cost, \$38,000	S. Q. Cannon, City Engineer.	

## SEWERAGE.

O., Charleston	July	22.. Constructing sewage disposal plant	Henry & Murphy, Engineers, Akron, O.
Wis., Kaukauna	2 p.m., July	22.. Sewers in several streets	City Clerk.
Minn., Duluth	11 a.m., July	22.. Constructing sanitary sewers	J. A. Farrell, Comnr. of P. W.
O., Marietta	July	23.. 2,600 ft. 4 to 12-in. tile sewers	E. F. Gates, Engineer.
Mo., Chillicothe	noon, July	23.. Constructing several sewers	J. W. Williams, City Auditor.
N. J., Skillman	1.30 p.m., July	24.. Extending sewer system and repairing disposal plant	Dept. of Charities and Corrections, State House, Trenton, N. J.
Cal., Los Angeles	2 p.m., July	24.. Remodeling sewer sys. and erect two pumps at co. farm.	H. J. Lelande, Co. Clerk.
O., West Park	July	24.. Constructing sanitary sewers	Fred Feuchter, Village Clk.
la., Stuart	July	24.. 80,000 ft. 6 to 12-in. vitrified and concrete sewer pipe	T. S. DeLay, Engr., Creston, Ia.
Wis., Racine	2 p.m., July	24.. 16 lateral tile sewers	J. L. English, Comr.
N. D., Garrison	3 p.m., July	24.. Constructing sewer system	Fred Gehner, City Auditor.
N. Y., L. I. City	11 a.m., July	24.. Constructing sewers and receiving basins	M. E. Connolly, Boro Pres.
O., Ravenna	July	24.. 4,000 ft. 8 to 36-in. tile and block sewer	W. H. Linton, Dir. of Service.
Fla., Arcadia	July	24.. 26,000 ft. 8 to 12-in. sewers	Cravens & Kimmel, Engrs.
Ind., Crawfordsville	July	24.. Constructing sanitary sewer	J. A. Cragwell, Engineer.
Pa., Etna	4 p.m., July	24.. Constructing sanitary sewer	J. C. Armstrong, Boro Clerk.
la., Waterloo	7:30 p.m., July	24.. 8 and 12-in. sewers in several streets	R. L. Degon, City Clerk.
la., Webster City	1:30 p.m., July	24.. 14,500 ft. 18 to 32-in. tile drains	A. J. Peterson, Co. Aud.
Pa., St. Marys	2 p.m., July	25.. 1,100 ft. 15-in. and 60 ft 24-in. storm water sewers	W. C. Hira, Boro Engineer.
Pa., Emporium	2 p.m., July	25.. 4,000 ft. 12-in. drainage tile sewers	F. F. Brady, Boro Engineer.
La., Shreveport	July	25.. Constructing sanitary sewer system	City Commission
N. J., Rahway	8 p.m., July	25.. 4,000 ft. 8 and 10-in. vit. tile sewers	Franklin Marsh, City Engr.
Minn., Morris	10 a.m., July	25.. Drainage ditch, requiring 8 to 24-in. tile	C. R. Wolltham, Co. Auditor.
Ind., Lafayette	July	26.. Constructing three sewers	H. B. Overesch, Engineer.
S. C., Charleston	Noon, July	26.. Drainage and levee work; pumping plant and pumps	Combahee Corporation, Consolidated Company Bldg.
N. Y., New York	2 p.m., July	26.. Reconstruct. sewers and imp. receiving basins	Comr. of Public Works, Bureau of Sewers.

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ia., Elkader	July 26	Constructing sewers	City Clerk.	
Ia., Sac City	10 a.m., July 27	Tile drainage work	E. W. Meier, Co. Aud.	
N. J., Elizabeth	3.30 p.m., July 27	Sewer construction	Board of Public Works.	
N. Y., New Brighton	noon, July 27	2,600 ft. 8-in. temporary sanitary sewers	Engineer, Bur. of Engrg.	
Ind., Hartford City	2 p.m., July 28	9,000 ft. 10 to 18-in. tile drain; 2,840 cu. yds. excav.	County Surveyor.	
Va., Williamsburg	noon, July 28	Constructing sewerage system	Bolton, Clark & Pratt, Inc., Engineers.	
Ill., Peotone	2 p.m., July 28	703 ft. 10-in. sewers	P. M. Collins, Pres. Citizens' Bank.	
O., Springfield	noon, July 28	Constructing combined sewer	C. E. Ashburner, City Mgr.	
Utah, Richfield	8 p.m., July 28	Installing tile drainage system	Bd. of Supervisors, Drainage Dist. No. 1.	
Mo., Chaffee	July 28	Settling tank, 34 manholes, 6 flush tanks and 4 miles 8 to 12-in. sewer	F. L. Wilcox, Engr., Syndicate Tr. Bldg., St. Louis, Mo.	
Ind., Indianapolis	10 a.m., July 28	Local sewers in several streets	City Engineer.	
Kan., Nickerson	July 31	600 ft. vitrified sewers	E. F. Turbush, City Clerk.	
Mo., Chillicothe	noon, July 31	Constructing sewers	J. W. Williams, City Auditor	
N. J., Ridgefield Park	Aug. 1	Sewers and sewage treatment plant	Village Commissioners	
Ind., South Bend	10 a.m., Aug. 1	Pipe sewers in three streets	Board of Public Works.	
Ont., Toronto	noon, Aug. 1	Constructing storm overflow sewer	Works Dept., City Hall.	
Conn., East Hartford	8 p.m., Aug. 1	Constructing sewers in four streets	Sewer Commissioners.	
Mont., Billings	Aug. 1	Constructing lateral storm sewers	E. M. Sneckenberger, City Engineer.	
Cal., Hanford	Aug. 1	Storm drain, cost \$35,000	E. M. Lynch, City Engr.	
N. J., Hoboken	10 a.m., Aug. 2	Constructing sewers in several streets	D. A. Haggerty, City Clerk	
Fla., Miami	Aug. 3	8 to 18-in. sewers, \$25,000 available	B. H. Klyce, Engr.	
O., Cheshire	noon, Aug. 5	Sewer system and disposal plant; cost, \$2,000	W. D. Ross, Pres. Bd. of Ed.	
O., Delaware	noon, Aug. 5	Sewage disposal plant at Central school	Richards Engineer'g Co., 37½ E. Long St., Columbus, O.	
Cal., San Jose	11 a.m., Aug. 7	Sewer at county infirmary	H. A. Pfister, Clk. Co. Supvrs.	
Pa., Athens	7:30 p.m., Aug. 7	Sewage disposal plant for 4,000 people	C. W. Tidd, Boro Sec'y.	
Fla., Deland	Aug. 7	Drains and storm sewers in connection with road work	J. B. McCrary Co., Atlanta, Ga.	
Ind., Indianapolis	10 a.m., Aug. 7	Constructing several sewers	City Engineer.	
O., Cleveland Heights	noon, Aug. 7	Constructing storm and sanitary sewers	F. A. Pease Engineering Co., Marshall Bldg., Cleveland, O.	
O., Ravenna	Aug. 15	Constructing sanitary sewers, cost \$9,000	W. H. Linton, Engr.	
WATER SUPPLY.				
N. C., Salisbury	2 p.m., July 22	Laying 5½ miles of 14 or 16-in. c. i. pipe and furn. motor cent. pumps, filtr. plant, reservoir, power station, tower and tank, etc.	J. L. Ludlow, Engineer, Winston-Salem, N. C.	
Mass., Holbrook	July 22	5,700 ft. 6-in. pipe	City Clerk.	
O., Medina	noon, July 22	Mechanical filtration and pumping plant	F. H. Rollins, Supt. W. W.	
Okl., Eufala	July 24	Constructing water works, cost \$25,000	M. L. Smith, Engr., McAlester	
O., Dover	July 24	Improving, equipping and extending waterworks system	P. W. Hill, Dir. Pub. Service.	
Fla., Arcadia	July 24	22,000 ft. 6-in. c. i. water main exten. and 46 hydrants	Cravens & Kimmel, Engrs.	
N. J., Skillman	1.30 p.m., July 24	Extending water system	Dept. of Charities and Corrections, State House, Trenton, N. J.	
N. D., Garrison	3 p.m., July 24	Constructing water works system	Fred Gehner, City Auditor.	
N. Y., Lewiston	6 p.m., July 25	5,000 ft. 6-in. c. i. water main, 4 valves and 8 hydrants	P. R. Morgan, River Rd., Lewiston, N. Y.	
Neb., Wahoo	2 p.m., July 26	225 h. p. engine and direct-connected generator, 25 h. p. motor and triplex pump	H. M. Robertson, Supt. W. & L.	
Cal., San Francisco	2 p.m., July 26	Mak. core borings along pro. Hetch-Hetchy aque. line	M. M. O'Shaughnessy, City Engineer.	
O., Cleveland	noon, July 26	Shaft for pumping station; pig lead	Deputy Comr. of Water.	
Tex., Kingsville	10 a.m., July 26	1,000 tons hemp, 17 tons lead, 920 tons c.-i. pipe, specials, valves, etc.	H. C. Porter, City Engr.	
Neb., Miller	1 p.m., July 27	Constructing waterworks system; cost, \$10,000	C. F. Sturtevant, Engineer, Holdrege, Neb.	
Wis., Shawano	July 27	Constructing large concrete dam, power house, and two flumes and furnishing 4,000 bbls. cement, 45,000 brick, reinforcing, etc.	Electric Lt. & Water Comn.	
Mo., Chaffee	July 28	Tower and tank, pumps and pumping station, oil engine, 22 hydrants, 24 valves and 3½ miles 4 to 8-in. pipe	F. L. Wilcox, Engr., Syndicate Tr. Bldg., St. Louis, Mo.	
Ill., Peotone	2 p.m., July 28	9,686 ft. 4 and 6-in. water pipe	P. M. Collins, Pres. Citizens' Bank.	
Ia., Clermont	July 28	Water system; cost, \$18,000	W. R. Blake, Mayor.	
O., Springfield	noon, July 28	Constructing waterworks line	C. E. Ashburner, City Mgr.	
Va., Williamsburg	noon, July 28	Constructing water system	Bolton, Clark & Pratt, Inc., Engineers.	
Ore., Oregon City	July 29	Constructing concrete reservoir, 5,000,000 gals. capacity	Water Commission	
Md., Takoma Park	8 p.m., July 31	Steel water tank tower and oil engine	Harry Stevens, Engr., Union Trust Bldg., Wash., D. C.	
Ind., Fort Wayne	10 a.m., July 31	Drilling and casing 6-in. well	Will Johnson, Co. Aud.	
O., South Charleston	noon, Aug. 1	Constructing water works system	S. B. Rankin, Clerk	
Ind., South Bend	10 a.m., Aug. 1	Making water connections	Board of Public Works.	
Ill., Dixon	10 a.m., Aug. 1	Two pump houses, steel tank and tower	F. D. Whipp, State Fiscal Supervisor, Springfield, Ill.	
Mont., Sheridan	Aug. 2	Concrete catch basin and reservoir, 16,000 ft. 4 to 6-in. c. i. pipe and 6,000 ft. 8-in. wood pipe	G. E. Baker, Engr., Whitehall, Mont.	
O., Cleveland Heights	noon, Aug. 7	6 and 8-in. c. i. water main construction	F. A. Pease Engineering Co., Marshall Bldg., Cleveland, O.	
Sask., Assiniboia	6 p.m., Aug. 8	Furn. and lay. 17,500 ft. 4 to 8-in. c. i. or steel pipe, erect. power station, constr. concr. reservoir, elec. pole line, storage tank, elec. appar., pump and oil engine	Murphy & Underwood, Engrs., Saskatoon, Sask.	
Mont., Sheridan	8 p.m., Aug. 9	Constructing complete water works system	G. E. Baker, Engr., Whitehall, Mont.	
N. Y., Red Creek	2 p.m., Aug. 10	Four miles 6 and 8-in. c.-i. pipe, pumping station and pumps and elevated water tank	F. M. Jones, Village Clerk	
O., Coshocton	noon, Aug. 10	Constructing pump pit and lowering suction line	Sam Ashman, Serv. Saf. Dir.	
Tex., Kenedy	Aug. 15	Waterworks system, oil engine, triplex pump and steel tank and tower	R. E. Goode, Village Clerk.	
MISCELLANEOUS.				
Fla., Jacksonville	noon, July 24	Six to 24 1 to 4-ton electric trucks and 6 to 48 trailers	J. C. O'Dell, General Manager	
Pa., Franklin	1 p.m., July 24	Materials for painting bridge over Allegheny River	County Commissioners.	
Ont., Guelph	July 24	Constructing Foley-McLean drain	D. A. Niven, Engr., McLean Building.	
O., Troy	10 a.m., July 24	Making fill at Covington bridge	C. N. Peters, Co. Aud.	



## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. Y.	Buffalo	11 a.m., July 24	Galvanized iron ash cans	John F. Malone, Comr. Parks & Pub. Bldgs.
N. D.	Minot	8 p.m., July 24	600-gal. horse-drawn sprinkler	A. D. Hagenstein, City Aud.
N. J.	Jersey City	8 p.m., July 25	Constructing hospital buildings	M. I. Fagen, City Clerk.
Minn.	Worthington	11 a.m., July 26	Constructing drainage ditch, cost \$6,500	Gus Swanberg, Co. Auditor.
N. Y.	New York	noon, July 27	Furn. labor and appliances for removing snow and ice from streets during winter of 1916-1917	J. T. Fetherston, Comr. of St. Cleaning.
Ind.	South Bend	9 a.m., July 28	Cleaning and repairing four ditches	Michael Wilhelm, Twn. Trus., Center Township.
Minn.	Buffalo	1 p.m., July 29	Drainage ditches, cost \$4,227	John A. Berg, County Auditor.
La.	Burtville	July 30	Drainage ditch work; cost, \$10,000	L. V. Huey, Engineer, Baton Rouge, La.
Ind.	Brazil	noon, July 31	Ditch work; flood gates; rip-rapping	Reservoir Improvement Co.
Ind.	Shelbyville	1 p.m., July 31	Constructing drainage ditches	W. H. Yarling, Trustee, Marion Twp.
Ind.	Knightson	8 p.m., July 31	Constructing radial brick chimney	L. E. Spencer, Town Clerk.
Ind.	Hartford City	2 p.m., July 31	Cleaning and repairing three ditches	Robt. Guseman, Van Cleve Block.
Vt.	Burlington	July 31	Collecting garbage for three years	F. J. Ennis, Secy. Bd of Hlth.
Minn.	Owatonna	2 p.m., July 31	Digging ditch and installing culverts	G. A. Ralph, Engineer, 16 Fulton Block, St. Paul, Minn.
Ind.	Shelbyville	1 p.m., July 31	Cleaning and repairing ditches	R. T. Gallagher, Twn. Trust.
Slam.	Bangkok	Aug. 1	Furnishing suction or hydraulic dredge	Director General, Royal Irrigation Dept.
Ia.	Des Moines	9 a.m., Aug. 2	Erecting 100-ton incinerator or reducer for garbage and refuse	Horace Susong, City Clerk.
Quebec	Outremont	8 p.m., Aug. 2	Constructing incinerator	City Engineer.
Minn.	Morris	2 p.m., Aug. 2	Ditch construction; cost, \$65,675	C. R. Wollthan, Co. Aud.
O.	Lancaster	Aug. 10	Dredging ditches; cost, \$105,600	C. O. Brown, Co. Engineer.

## STREETS AND ROADS

**Fort Smith, Ark.**—The paving of South 6th St. to Garland Ave. is under consideration.

**Little Rock, Ark.**—Plans are under consideration for constructing about 10½ miles of road in Arkansas County and Washington County at a cost of about \$50,000.

**Auburn, Cal.**—Bonds amounting to \$25,000 will be issued for street paving.

**Sacramento, Cal.**—The new Truckee-Reno road will cost approximately \$60,000.

**Sacramento, Cal.**—The improvement of several streets has been ordered.

**Santa Ana, Cal.**—Yorba Linda district expects to expend \$40,000 for road improvement.

**San Rafael, Cal.**—Marin County is to spend \$14,000 more on roads.

**Sunnyvale, Cal.**—A special election will be held July 25 for the purpose of voting on bond issue amounting to \$10,000 for street paving and road construction.

**Stamford, Conn.**—City Council has appropriated sums amounting to \$32,246 for city improvement.

**Newark, Del.**—It is proposed to pave West Main St. with macadam.

**Wilmington, Del.**—Philadelphia turnpike is to be improved at a cost of \$8,000.

**Washington, D. C.** (Consular Dept. No. 21816).—A Government official in Brazil is interested in receiving catalogues and price lists, including discounts, etc., of road machinery. Correspondence and literature should be in Portuguese.

**St. Augustine, Fla.**—Bonds amounting to \$200,000 for roads, are contemplated.

**St. Petersburg, Fla.**—A bond issue amounting to \$160,000 is contemplated.

**Atlanta, Ga.**—An ordinance for paving Peachtree St. from 15th St. to city limits has been passed. County will pay \$15,000 as the city's part of the expense. The remainder of expense for paving will be borne by property owners.

**Atlanta, Ga.**—Vernon Ave. from Killian St. to the boundary of the Barth estate, and Berne St. from the Atlanta and West Point belt line to far end of Vernon Ave. is to be paved.

**Pittsfield, Ill.**—Road bonds amounting to \$600,000 are to be issued. 300 miles are to be improved, 150 of which have already been selected.

**Springfield, Ill.**—Lake County has been given \$11,953 for road improvements and building.

**Springfield, Ill.**—City engineer's estimate on cost of widening and paving Capitol Ave., between Second and Tenth Sts., as submitted to Commissioner F. W. Hamilton, is \$34,874. The estimate of brick pavement on West Grand Ave., between South Grand Ave. and Laurel Ave., is \$12,072.30.

**Boonville, Ind.**—A bond issue amounting to \$92,000 has been authorized for construction of 23 miles new macadam road.

In This Issue:  
Contract News

## Roads and Streets.

92 new bids asked  
133 proposed work items

## Sewerage:

40 new bids asked  
44 proposed work items

## Water Supply:

26 new bids asked  
34 proposed work items

408 advance news items, including "Miscellaneous"—all new and reliable, for the municipal works contractor. More municipal contract news than any other paper.

Municipal Journal Leads  
in Service to Contractors

**Brookville, Ind.**—July 22, 1916, at 1 p. m., by Treasurer of Franklin County, for sale, \$12,620 highway improvement bonds, 4½ per cent., 10 years. Wm. M. McCarty, Treasurer.

**Brownstown, Ind.**—July 28, 1916, at 10 a. m., by Treasurer of Jackson County, for sale \$13,300, \$23,600, \$4,800, \$15,800 and \$55,800 highway improvement bonds, 4½ per cent., 10 years. John E. Belding, Treasurer.

**Columbia City, Ind.**—July 25, 1916, at 1 p. m., by Treasurer of Whitley County, for sale \$24,238 highway improvement bonds, 4½ per cent., 10 years. Oliver E. Long, Treasurer.

**Connersville, Ind.**—July 22, 1916, at 10 a. m., by Treasurer of Fayette County, for sale \$40,268 highway improvement bonds, 4½ per cent., 10 years. Ben W. Cole, Treasurer.

**English, Ind.**—Aug. 7, 1916, at 2 p. m., by Treasurer of Crawford County, for sale \$3,000 highway improvement bonds, 4½ per cent., 10 years. A. H. Flanagan, Treasurer.

**Evansville, Ind.**—City engineer's estimate on improving 370 ft. on Riverside Ave. from Ewing St. is \$2,699.70, and Howard St. from Second St. to Van Buren Ave., \$5,953.99.

**Fort Wayne, Ind.**—J. F. Wild & Co. have purchased road bonds for \$29,000, to be used for construction of Isaac W. Johnson road in Etna Township.

**Franklin, Ind.**—July 25, 1916, at 10 a. m., by Treasurer of Johnson County, for

sale \$6,500, \$14,900, \$20,200 and \$5,000 highway improvement bonds, 4½ per cent., 10 years. Harry Bridges, Treasurer.

**Greensburg, Ind.**—Aug. 4, 1916, at 2 p. m., by Treasurer of Decatur County, for sale \$2,200 highway improvement bonds, 4½ per cent., 10 years. Albert Bolling, Treasurer.

**Indianapolis, Ind.**—Meyer-Kiser Bank have purchased county road bonds amounting to \$3,918. Fletcher American Bank have purchased county road bonds amounting to \$16,890.

**Indianapolis, Ind.**—Delaware County National Bank, Muncie, have purchased county road bonds amounting to \$109,200. First National Bank, Petersburg, has purchased road bonds amounting to \$5,400.

**Indianapolis, Ind.**—College Ave. from Maple road to 49th St. is to be permanently improved. Resolutions have been adopted for the permanent improvement of the following streets and alleys: Olney St., from Pratt St. to 10th St.; Gale St., from 10th St. to 16th St.; the second alley east of Coyner Ave., from 16th St. to the first alley north of 16th St.; the first alley north of Sixteenth St. from the first alley west of Tacoma Ave. to Tacoma Ave., and the first alley north of 16th St. from the first alley east of Coyner Ave. to the second alley east of Coyner Ave.

**Knox, Ind.**—July 25, 1916, at 12 m., by Treasurer of Starke County, for sale \$13,000 highway improvement bonds, 4½ per cent., 10 years. Henry Luken, Treasurer.

**La Porte, Ind.**—A sidewalk is to be laid on the north side of Kosciusko St.

**La Porte, Ind.**—Indiana Ave. is to be improved from South Ave. to the south line of Steigely's Addition.

**Logansport, Ind.**—July 24, 1916, at 10 a. m., by Treasurer of Cass County, for sale \$12,000 highway improvement bonds, 4½ per cent., 10 years. D. A. Hyman, Treasurer.

**Monticello, Ind.**—July 29, 1916, at 10 a. m., by Treasurer of White County, for sale \$6,400, \$5,000 and \$11,000 highway improvement bonds, 4½ per cent., 10 years. O. C. Middlestadt, Treasurer.

**Plymouth, Ind.**—Aug. 1, 1916, at 2 p. m., by Treasurer of Marshall County, for sale \$29,000, \$19,000 and \$11,750 highway improvement bonds, 4½ per cent., 10 years. George W. Huff, Treasurer.

**Plymouth, Ind.**—The Fletcher American Bank, of Indianapolis have purchased \$12,000 bond issue. A bond issue amounting to \$21,900 has been purchased by C. A. Reeve, and Marshall County Trust & Savings Co.

**Putnamville, Ind.**—July 29, 1916, at 10 a. m., by Trustee of Warren Township, Putnam County, for sale \$5,500 highway improvement bonds, 4½ per cent., 11 years. Wm. O. Lewis, Trustee.

**Shelbyville, Ind.**—July 22, 1916, at 10 a. m., by Treasurer of Shelby County, for sale \$9,600 and \$9,140 highway improvement bonds, 4½ per cent., 10 years. S. A. Brown, Treasurer.

**Shelbyville, Ind.**—Bids submitted on Scott road in Jackson Township have been rejected and will be readvertised.

**Terre Haute, Ind.**—Breed, Elliott & Harrison, Indianapolis, have purchased gravel road bond issue amounting to \$9,000. Other bidders were: Gavin L. Payne & Co., Fletcher American Bank, J. F. Wilde & Co.

**Muscatine, Ia.**—Bids received for surfacing 14,000 sq. yds. sand clay, as follows: E. L. Gochanour, excavation 23 cents per yd., surfacing 11 cents per sq. yard.

**Chanute, Kan.**—The macadam on South Evergreen, South Steuben and North Santa Fe is to be oiled.

**Frontenac, Kan.**—An ordinance has been passed providing for constructing sidewalks on several streets.

**Pittsburg, Kan.**—City will put gravel on South Broadway if property owners will furnish the material.

**Topeka, Kan.**—A new automobile highway to be known as the Salina Northern Highway is being planned.

**Jennings, La.**—The sum of \$500,000 has been voted for construction of highway system for Jefferson Davis parish; construction will begin about August 1st.

**Lake Charles, La.**—Lawrence St. from west side of Ryan St. to bank of Lake Charles is to be paved.

**Haverhill, Mass.**—Winter and White Sts. are both to be reconstructed at a cost of \$30,000.

**Holyoke, Mass.**—It has been voted to concrete Pleasant St. from where the street is now concreted to end of accepted portion. Also to pave Ely St., a 5-in. base to be used with 2-in. asphaltic blocks from Bowers to Summer Sts., and to pave Beech St. the full width from Northampton to Sargeant Sts. with a 4-in. base and a half-inch asphaltic top. Six-inch curbing will also be laid on Beech St.

**Pittsfield, Mass.**—City Council is considering the paving of Melville St.

**Pittsfield, Mass.**—The mayor has signed an order for laying out Catherine St. as a city way.

**Monroe, Mich.**—Construction of the Detroit-Toledo highway is assured and will be completed this year.

**Monroe, Mich.**—Detroit-Toledo highway will be constructed of concrete and will cost over \$150,000.

**Pontiac, Mich.**—The westerly end of Grove St., 60 ft. wide and 356 ft. long, is to be closed.

**Pontiac, Mich.**—Sidewalks are to be constructed on several streets.

**Albert Lea, Minn.**—The streets will be oiled instead of sprinkled.

**Carterville, Mo.**—Main St. from the viaduct to the junction is to be paved with concrete.

**Joplin, Mo.**—Ordinances have been passed providing for construction of class F macadam pavement on Winfield Ave. from 4th St. to 4th St. addition, a concrete culvert on cut-off road north of Central Ave. west of the Range line, and a box concrete culvert under 4th St. 76 ft. west of Maple Ave.

**Atlantic City, N. J.**—It is planned to expend about \$150,000 in paving several streets.

**Camden, N. J.**—Ordinances have been passed providing for the paving of Mt. Ephraim Ave., Jackson St., and Federal St.

**Hillside, N. J.**—Two ordinances, one defining the lines of Long Ave., from Bloy Ave. to Hillside Ave., a width of 41½ feet, and the other for the construction of a 4-ft. concrete sidewalk on Broadway, from Long Ave. to Silver St., have been passed.

**New Brunswick, N. J.**—One bid of \$5,000 has been received for the construction of a Wheeler filter bottom at the mechanical filtration plant to be erected at the city reservoir.

**Passaic, N. J.**—Road bed in Passaic St. at the turn just below Columbia Ave. is to be repaired, also in Monroe St.

**Toms River, N. J.**—Plans and specifications have been approved by county board for the crushed stone surface to be laid on Main St. 594 feet, 6 inch top will require 555 tons crushed stone estimated cost being \$1,500.

**Binghamton, N. Y.**—Co. Supt. of Highways has received word from State Department of proposal and plans to build three roads in this county at a total cost of \$216,200. The roads are: Castle Creek-Whitney Point, 6.92 miles, at approximately \$102,900; Stella-New Ireland, 4.71 miles, at about \$50,400; Maine-Glen Aubrey, 5.35 miles, at about \$62,900.

**Brooklyn, N. Y.**—A proposed highway called the Interboro Parkway, costing about \$500,000 is under consideration.

**Lockport, N. Y.**—The paving of Lockport St. from Sugar St. to Fletcher's

corners and Evershed St. from Buffalo St. to Pine Ave., is contemplated.

**Newburgh, N. Y.**—It is proposed to raise a sum of \$12,000 for the improvement and proper rebuilding of bituminous macadam or similar type of construction of the public highway extending from Hudson St. to main entrance of Firth Carpet Mills.

**Patchogue, L. I., N. Y.**—Village trustees have presented a petition to Highway Commissioner Duffy to have laid a concrete road in East and West Main St. as a part of state highway system.

**Rome, N. Y.**—Bids will be readvertised for the widening of East Dominick St. from James to Spring St.

**Syracuse, N. Y.**—County highway bonds amounting to \$30,554 will be issued to pay county's share of the cost of county highways to be built. The roads are: Sandy Creek-Smartsville, in the towns of Sandy Creek and Smartsville, total cost will be \$84,500, of which county pays \$27,040 and state \$57,460; Fulton-Volney, Part II, in city of Fulton and town of Volney, total cost \$10,600. County's share \$2,314, city of Fulton, \$613.55.

**Syracuse, N. Y.**—Bitulithic concrete has been designated as the material for resurfacing pavements in East Fayette St. from Montgomery St. to South State St., East Jefferson St. from South State St. to Almond St., East Jefferson St. from Almond St. to Forman Ave., Almond St. from East Jefferson St. to East Genesee St., and Forman Ave. from East Jefferson St. to East Genesee St.

**Syracuse, N. Y.**—It is proposed to widen Hiawatha Ave. to 100 ft.; Bear St. is to be extended; also Wolf St.

**Watertown, N. Y.**—Coffee St. is to be improved by curbing and construction of gutters.

**Yonkers, N. Y.**—Ordinances have been passed providing for the redressing of curbs and paving of Morris St. from South Bway to Hawthorne Ave.; the paving of Willow St. from Poplar St. to Oak Pl., and curbing repaired on McLean Ave. from Bronx River Rd. to Kimball Ave.

**Wilmington, N. C.**—Co. Comrs. have been urged to improve Carolina Beach Blvd. a distance of about 4,000 ft. from the main road.

**Winston-Salem, N. C.**—There will be a special election August 15 to vote on the issuance of bonds amounting to \$20,000 for the construction of roads.

**Bowling Green, O.**—Sealed bids will be received until 1 p. m., July 21, for the purchase of bonds amounting to \$30,000 to pay expenses of improvement on Albert Ayres stone road. R. S. Gillespie, County auditor.

**Cincinnati, O.**—Bonds amounting to \$251,250 are to be issued to provide funds for resurfacing, improving and widening Hamilton Ave. Bonds amounting to \$459,750 for improving Eastern Ave. are to be issued, also \$151,500 for improving Fairbanks Ave. Bonds amounting to \$142,500 for improving Ludlow Ave. are to be issued.

**Delaware, O.**—Bonds amounting to \$2,000 will be issued providing for the repaving of several streets.

**Euclid, O.**—Sealed bids will be received until 12 o'clock, noon, August 14, for the purchase of highway bonds amounting to \$5,000.

**Lorain, O.**—An ordinance has been passed providing for the paving of East Erie Ave. between the viaduct and Colorado Ave. Bonds amounting to \$8,000 will be issued to cover city's share of the expense.

**Massillon, O.**—Canal St. is to be paved from West Tremont to West Walnut St., other streets to be improved are: Sidewalks on Young St. from Highland to Walnut St.; Wissmar St. from Tremont to Green St.; Green St. from Jarvis Ave. to Waechter St.; Borden Ave. from Wissmar St. to the west end; Walnut St. from Duncan St. to Jarvis Ave.; Clay St. from Cherry to Gross St.; Woodland Ave. from Erie St. to corporation line; Pearl St. from Erie St. to corporation line; Pletzcker Ave. from Main St. to Tremont St.; Paul St. from Cherry St. to the north end; Plum St. from Center to 3rd St., and improving by constructing curb, gutter and sidewalks on Sipso St. from Lincoln Ave. to the creek bridge; North St. from Front St. to Sipso park; Rodman St. from 3rd St. to 180 feet east of Front St., and on Wallace St. from Locust to Pine Sts.

**Muncie, O.**—Delaware County Bank have purchased road bonds amounting to \$109,200.

**Piquette, O.**—Bonds amounting to \$5,000 are to be issued for a portion of the expense of improving Ash St. from Main St. to the Great Miami River bridge.

**Salem, O.**—The total amount of road improvement bonds sold was \$383,700 and they brought a total premium of \$11,759.42. The different roads sold are as follows: Calcutta-Frederickstown; bond issue \$19,400. Wellsville-Calcutta; bond issue, \$13,000. Park Way-Martin's Ferry; bond issue, \$13,600. Park Boulevard; bond issue, \$16,100. Wellsville-Lisbon; bond issue, \$12,500. Salem-Goshen; bond issue, \$15,700. Damascus-Valley; bond issue, \$17,000. Salem-Winona; bond issue, \$23,700. Thomas Rd., Knox Township; bond issue, \$39,500. Sold to Provident Savings Bank & Trust Co., Cincinnati. Premium, \$1,188.95. Six bids. Salem-Canfield; bond issue, \$25,200. Sold to Provident Savings Bank & Trust Co., Cincinnati. Rogers-East Fairfield; bond issue, \$6,900. Salem-Lisbon; bond issue, \$105,000. Kensington-Carrollton; bond issue \$6,000; sold to Tillotson & Wallmott Co., Cleveland. Lisbon-Bayard-Canton; bond issue, \$30,000. Sold to Security Savings & Trust Co., Toledo. East Liverpool-Cannons Mill; bond issue, \$41,000. Sold to Security Savings & Trust Co., Toledo.

**Tiffin, O.**—City council has passed an ordinance to proceed with the improvement on North Washington St. from the north line of Water St. to the south line of Harrison St.

**Youngstown, O.**—Sealed proposals will be received until 12 o'clock noon, July 24, on street improvement bonds amounting to \$56,075 and sewer bonds amounting to \$11,160.

**Eugene, Ore.**—Work on the Pacific highway between Cottage Grove and the county line, will soon be started, \$10,000 has been appropriated for its construction.

**Eugene, Ore.**—Building of road from Eugene to Lorane, by way of Porter Acres and Spencer, Butte County, is again under consideration.

**Norway, Ore.**—Bids recently submitted for paving were all in excess of amount appropriated so voters will decide what to do at a special meeting.

**Portland, Ore.**—Clarke Kendall & Co. have purchased road bonds amounting to \$362,000.

**Beaver, Pa.**—Bids for the grading and paving of Seventh Ave., between 20th and 27th Sts., have been received as follows: Toney Pietro, of Morgantown, W. Va.; J. I. Dick, Scottdale; R. D. Hunter, Beaver; J. G. McGuire & Co., New Brighton, and R. G. Thomas, Pittsburgh. J. G. McGuire & Co. was the lowest bidder.

**Cresson, Pa.**—Bonds amounting to \$25,000 have been purchased by the Cresson First National Bank. Several streets are to be paved with brick on a concrete base.

**Emporium, Pa.**—Bonds amounting to \$40,000 are to be issued for the paving of Main St. a distance of 4½ miles. Bids will be advertised for at once.

**Erie, Pa.**—An ordinance has been passed providing for the improvement of Poplar St. from 17th to 18th Sts., by grading, curbing and paving.

**Erie, Pa.**—Sealed proposals will be received until 10 o'clock a. m., July 25, for the purchase of bonds amounting to \$215,000. T. Hanlon, City Clerk.

**Harrisburg, Pa.**—An ordinance has been passed authorizing the grading of Swatara St. from 21st to 22d Sts., also authorizing the paving and curbing of River St. from Delaware St. to Pepper St.

**Newport, Pa.**—Bonds amounting to \$41,000 will be issued for improving streets.

**Wilkes-Barre, Pa.**—Ordinances have been passed providing for the paving and improvement of Ruddle, Waller and Solomon Sts.

**Williamsport, Pa.**—Court St. and Grafus St. are to be paved.

**Pawtucket, R. I.**—\$9,500 has been appropriated for purchase of land for the widening of Broad St.

**Bristol, Tenn.**—City Council has ordered sidewalks laid on south side of West State St. between 14th and 15th Sts. and on Windsor Ave. over 300 feet west to 17th St.

**Clifton, Tenn.**—September 2, Wayne Co. citizens will vote on the issuance of road bonds amounting to \$150,000.

**Maynardville, Tenn.**—\$10,000 has been appropriated to pay for the link of the Dixie Highway.

**Rockwood, Tenn.**—Twenty-five thousand dollars has been appropriated for Roane County roads.



**Portsmouth, Va.**—Construction of Hodges Ferry road for two miles with clay and gravel surface, is under consideration.

**Suffolk, Va.**—Several streets are to be improved with concrete curbing and gutters, others will be paved with macadam, and considerable sidewalk work will be done.

**Edgerton, Wis.**—Street assessment committee have advertised for bids for paving on Main, Swift and Washington Sts.

## BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded).

**Fort Smith, Ark.**—Bids received for the paving of 6th St. as follows Burke Brick Co., local, with brick, at \$1.75 per yard on concrete base and \$1.50 per yard on brick base. Other bids were: Asphalt concrete—F. P. McCormack 97c; Cooke, 98c; Kaw Paving Co., 93c; Sheet Asphalt—F. P. McCormack, \$1.10; Cooke, \$1.30; Kaw Paving Co., \$1.15. Bitulithic—M. D. L. Cooke, \$1.40 macadam base; \$1.30 brick base. Monolithic Concrete—Jarrott-Richardson Co., \$1.45; Kaw Paving Co., \$1.30; Williams Bros. & Payne, \$1.20.

**Berkley, Cal.**—Hutchinson Company for paving, prices as follows: Grading, per cubic yard, 30 cents; macadamizing, per sq. ft., 8 and 1½ cents; concrete gutters, per sq. ft., 13 cents; concrete curbing, per linear foot, 40 cents; 7-in. by 30 inch iron culvert, per lin. ft., \$2.60; 6 inch by 24 inch iron culvert, per lin. ft., \$2.30; concrete wall, per cubic yard, \$10; pipe railing, per lin. ft., 25 cents.

**St. Augustine, Fla.**—Biscayne Construction Co., for paving and grading about 3 miles of sidewalks will be built.

**Boise, Ida.**—Excavation, asphalt, quantities, 14,808 cu. yds.: F, 67 cts. Excavation, 6-in. pavement, 14,170 cu. yds.: A, 70 cts.; B, 72 cts.; C, 44½ cts.; D, 50 cts.; E, 70 cts.; F, 67 cts. Excavation, 5½-in. pavement, 13,530 cu. yds.: A, 70 cts.; B, 75 cts.; C, 44½ cts.; E, 70 cts.; F, 67 cts. Excavation, 5-in. pavement, 12,890 cu. yds.: A, 70 cts.; B, 75 cts.; C, 44½ cts.; E, 70 cts.; F, 67 cts. Excavation, overhaul, 100 ft.: A, 2 cts.; B, 2 cts.; D, .006 ct.; E, 2 cts.; F, 1 ct. Street car pavement, 4,560 sq. yds.: A, \$2.65; B, \$2.71; C, \$2.05; D, \$1.40; E, \$2.73; F, \$2.85. With asphaltic concrete, 4,560 sq. yds.: A, \$2.65; C, \$1.75; F, \$2.78. With bit. top concrete, 4,560 sq. yds.: C, \$1.65. With plain concrete, 4,560 sq. yds.: C, \$1.60. Concrete curb gutters, without guaranty, 7,964 sq. yds.: C, \$1.30; F, \$1.25. Concrete curb gutters, with guaranty, 7,964 sq. yds.: C, \$1.35; F, \$1.40. Reinforced concrete gutter plates, 722 sq. ft.: A, \$1; B, 90 cts.; C, 30 cts.; D, 15 cts.; E, \$1.05; F, \$1. C. 1. gutter plates, 5,630 lbs.: A, 4½ cts.; B, 6 cts.; C, 3½ cts.; D, 3½ cts.; E, 5 cts.; F, 5 cts. 12-in. semi-circular concrete gutters, 396 lin. ft.: A, \$1.10; B, \$1.10; C, 90 cts.; D, 80 cts.; E, \$1.15; F, \$1.10. Sidewalks, 150 lin. ft.: A, 75 cts.; B, 72 cts.; C, \$1; D, 60 cts.; E, 65 cts.; F, 60 cts. Curb, 7,270 lin. ft.: A, 31 cts.; B, 33 cts.; C, 36 cts.; D, 36 cts.; E, 30 cts.; F, 30 cts. 4-in. vitrified pipe, 560 lin. ft.: A, 22 cts.; B, 25 cts.; C, 16 cts.; D, 16 cts.; E, 23 cts.; F, 20 cts. 10-in. vitrified pipe, 46 lin. ft.: A, 50 cts.; B, 57 cts.; C, 55 cts.; D, 45 cts.; E, 54 cts.; F, 50 cts. 12-in. vitrified pipe, 132 lin. ft.: A, 70 cts.; B, 75 cts.; C, 75 cts.; D, 56 cts.; E, 65 cts.; F, 65 cts. 18-in. vitrified pipe, 156 lin. ft.: A, \$1.20; B, \$1.25; C, \$1.10; D, \$1; E, \$1.10; F, \$1.18. 4-in. concrete pipe, 560 lin. ft.: A, 22 cts.; B, 25 cts.; C, 15 cts.; D, 14 cts.; E, 23 cts.; F, 20 cts. 10-in. cor. steel pipe, 46 lin. ft.: A, \$1.25; B, \$1.30; C, \$1.15; D, 75 cts.; E, \$1.25; F, \$1.30. 12-in. cor. steel pipe, 132 lin. ft.: A, \$1.40; B, \$1.50; C, \$1.20; D, 96 cts.; E, \$1.50; F, \$1.42. 18-in. steel pipe, 156 lin. ft.: A, \$1.90; B, \$2; C, \$1.60; D, \$1.36; E, \$1.95; F, \$1.95. Asphalt, without guaranty, 38,060 sq. yds.: F, \$1.55. Asphalt, with guaranty, 38,060 sq. yds.: F, \$1.62. Asphalt concrete, without guaranty, 38,060 sq. yds.: C, \$1.48; F, \$1.50. Asphalt concrete, with guaranty, 38,060 sq. yds.: C, \$1.55; F, \$1.62. Bituminous pavement—Gravel, 4-in. con. base, 2-in. top, without guaranty, 45,180 sq. yds.: A, \$1.74; B, \$1.81; C, \$2.15; E, \$1.85; F, \$1.86. Gravel, 4-in. con. base, 2-in. top, with guaranty, 45,180 sq. yds.: A, \$1.75; B, \$1.85; C, \$2.20; E, \$1.90; F, \$1.88. Light standard, without guaranty, 45,180 sq. yds.: A, \$1.60; B, \$1.66; C, \$1.63; E, \$1.67; F, \$1.72. Light standard with guaranty, 45,180 sq. yds.: A, \$1.61; B, \$1.70; C, \$1.67; E, \$1.72; F, \$1.74. Gravel, 3-in. base, 2-in. top, without guaranty, 45,180 sq. yds.: A, \$1.63; B, \$1.66; C, \$2; E, \$1.67½; F, \$1.74. Gravel, 3-in. base, 2-

in. top, with guaranty, 45,180 sq. yds.: A, \$1.64; B, \$1.70; C, \$2.05; E, \$1.72½; F, \$1.76. Gravel, 3½-in. base, 1½ in. top, without guaranty, 45,180 sq. yds.: A, \$1.62; B, \$1.65; C, \$1.98; E, \$1.66; F, \$1.72. Gravel, 3½-in. base, 1½-in. top, with guaranty, 45,180 sq. yds.: A, \$1.63; B, \$1.70; C, \$2.05; E, \$1.71; F, \$1.74. Concrete valleys, without guaranty, 844 sq. yds.: A, \$1.65; B, \$1.72; C, \$1.45; E, \$1.80; F, \$1.75. Concrete valleys, with guaranty, 844 sq. yds.: A, \$1.77; B, \$1.80; C, \$1.50; E, \$1.85; F, \$1.95. Plain concrete, without guaranty, 46,024 sq. yds.: C, \$1.30; D, \$1.08. Plain concrete, with guaranty, 46,024 sq. yds.: C, \$1.36; D, \$1.18. Concrete bit. top, without guaranty, 38,060 sq. yds.: C, \$1.35. Concrete bit. top, with guaranty, 38,060 sq. yds.: C, \$1.43. A list showing specifications and prices bid on asphalt, asphaltic concrete, bitulithic, plain concrete and concrete with bituminous top are now on file in the city engineer's office of Boise, Idaho, to which reference is hereby made and can be seen by anyone. By order of council of Boise City, Idaho, July 3, 1916. Nancy E. Robertson, City Clerk.

A—Warren Brothers Construction Co., Portland, Ore. B—Morrison-Knudson, Boise, Ida. C—J. J. Carroll, Boise, Ida. D—Manly Bros., Boise, Ida. E—Idaho Hwd., Plum., Co., and S. E. Burnham, Boise, Ida. F—J. C. Magnin, Butte, Mont.

**Springfield, Ill.**—C. A. Michael, Mattoon, Ill., for constructing roads, Champaign County, Section F, brick, at \$11-146.80, Section H at \$11,362.59. \*Stipes & Pilcher, Champaign, Ill., Section I, at \$11,425. \*Frederick J. Ward, 28 East Jackson St., Chicago, Henry County, Section C, oiled earth, at \$22,955.05. \*F. L. Shidler, Kankakee, Ill., Kankakee County, Section F, brick, at \$17,867.99. \*Le High Stone Co., Kankakee, Ill. Kankakee Co., Sec. G, waterbound macadam, at \$8,339. \*Jansen & Zoeller, Pekin, Ill., Mason County, Section A, oiled earth at \$9,972.62. \*L. V. Chesrown, Olney, Ill., Richland County, Section B, earth at \$1,548, and Section C, at \$1,579. \*Gund-Graham Co., Freeport, Ill., Stephenson County, Section D, waterbound macadam at \$11,939.33.

**Brookville, Ind.**—Bids received for macadam road as follows: T. Heidlage, Oldenburg, at \$8,080; Putnam & Parr, New Point, at \$11,770.

**Brazil, Ind.**—Bids received for construction of 4½ ft. concrete sidewalks and curbs on North Ashley St. as follows: Campbell & Hawkins, 58½ cents per lineal foot, W. H. Rupert 57 cents per lineal foot.

**Franklin, Ind.**—For bricking West Madison St. to the Fair Ground, \*Bergen & Jeffery, local, at \$13,500.

**Goshen, Ind.**—Bids received for brick pavement as follows: \*Cripe & Seaman, local, at \$21,772; Reath Construction Co., at \$22,525.

**Indianapolis, Ind.**—L. J. Utley and \*Arkansas Construction Co., Mt. Vernon, for two Posey County roads at \$11,690 and \$11,313, respectively.

**Indianapolis, Ind.**—Masters Construction Co., three miles of concrete road, for \$54,900; also another road, concrete and macadam construction, for \$12,624. \*James De Golyer, of Seymour, 2 miles water-bound macadam road, for \$15,159, and 2 miles gravel and concrete roadway, half-mile concrete and remainder gravel, for \$23,000. \*Jennings & Befont, Seymour, for 2 miles of gravel roadway, at \$4,444. No bids were received for a road in Vernon Twp. This will be a water-bound macadam road. Bids will be received in August.

**Indianapolis, Ind.**—J. S. Adams Construction Co., for the improvement of the John Lund gravel road south of Sullivan, Ind., at \$24,600. \*Fred Braun, for a macadam road, for \$2,699.

**Indianapolis, Ind.**—E. L. Maggard, of Austin, Ind., for construction of 2,585 ft. of gravel roadway in Vienna Twp., for \$17,550.

**Indianapolis, Ind.**—A. G. Miller, of Aurora, Ind., for Center Twp. macadam road, Dearborn County, at \$12,979.

**Indianapolis, Ind.**—Putnam & Carr, of New Point, Ind., for construction of 12,600 ft. of macadam roadway for Franklin County, at \$11,770.

**Indianapolis, Ind.**—Bids on the lineal foot basis for paving Park Ave. from 42d St. to 44th St. follow: Republic Construction Co., "first grade" asphalt, \$2.64, and bituminous concrete, \$2.49; the Indiana Asphalt Paving Co., "first grade" asphalt, \$2.63, and bituminous concrete, \$2.50., and from 44th St. to 46th St. on a lineal foot basis: Republic Construction Co., "first grade" asphalt, \$4.90, and

bituminous concrete, using the favored asphalt, \$4.70; the Indiana Asphalt Paving Co., "first grade" asphalt, \$4.85, and bituminous concrete, using Mr. Moore's asphalt, \$4.60.

**Kokomo, Ind.**—\*Kokomo Asphalt Paving Co., for construction of Dan Brown road, at \$35,200. \*Fred Davenport, for construction of Fay Cullen road, at \$5,216. \*George Morrow, for Vester Wilson road at \$8,837.

**Mt. Vernon, Ind.**—\*Coulson & Angermeyer, for construction of the Jos. L. Schneider rock road, at \$1,944.

**Monticello, Ind.**—Roudebush road, \*George W. Tyrell, \$5,862; Brock road, \*M. L. Rice, \$10,394; Criswell road, \*G. A. Kennenburger, \$4,595.

**Muncie, Ind.**—\*William Torrence, improving 9th St. from Hoyt Ave. to Brady St., macadam surface, cement curb and gutter.

**Shelbyville, Ind.**—Bids received for construction Scott Rd., as follows: Harvey Oltman, at \$10,979; John S. Scheafer of Bartholomew County, at \$12,402.48.

**Valparaiso, Ind.**—Bids received for limestone paving in Porter County, as follows: \*Ray Demass, Chesterton, Ind., at \$9,090; Louis Martine, Laporte, Ind., at \$11,570.

**Vincennes, Ind.**—Bid received for paving: Tony Hess, local, at \$480.

**Marshalltown, Ia.**—Bids received for concrete pavement on 6-in. foundation, Western Construction Co., Sioux City, concrete \$1.34 per sq. ft., clay gravel 56 cents, curb, 36 cents, excavation, 45 cents; A. Carlson, local, concrete, \$1.38 per sq. ft., clay gravel, 58 cents, curb, 35 cents, excavation 45 cents.

**Waterloo, Ia.**—Bids received for paving 25,000 sq. yds. 2-in. sheet asphalt, at \$2.10 per sq. yd.; 3-in. wood block, at \$2.49 per sq. yd.; 15,000 sq. yds. 1½-in. sheet asphalt at \$1.79 per sq. yd., all on 5 or 6-in. concrete base, from: Bryant Asphalt Paving Co., local.

**Louisville, Ky.**—John Howe, for construction concrete foundation of Silver St. pavement at 68 cts. an hour. The vitrified brick paving will be laid by men of street department.

**Bangor, Me.**—Bids received for construction of state highway, a gravel road as follows: Gardiner, 4.55 miles, E. T. Mitchell, Oakland, \$31,583.31; \*Smith & Havey, West Sullivan, \$23,568.77; Forgiome & Romano, Portland, \$38,408.51; Noyes & Campbell, Augusta, \$37,651.26; Richmond, 0.56 miles, Noyes & Campbell, Augusta, \$5,684.98; \*Smith & Havey, West Sullivan, \$3,481.60; E. T. Mitchell, Oakland, \$4,530.93.

**Boston, Mass.**—\*Central Construction Co., for paving 21,800 square yards 3-in. asphalt on a 4-in. base at \$1.58 per sq. yd.

**Pontiac, Mich.**—\*C. R. Bradley, South Lyon, for construction 4¼ miles state trunk road in Lydon and Milford townships, at \$13,515.45. Road commission is to furnish all gravel, tile and other materials used in construction.

**Duluth, Minn.**—Paving 20th Ave. east from 5th to 8th St., \*D. H. Clough, at \$9,028.80; paving Fourth alley from 26th to 27th Ave. west, \*A. A. Bodin & Son, at \$1,589.40; laying sanitary sewer in 102nd Alley west from McGonagle to Soule St., \*Eklund, Hedberg & Carson, at \$1,330.50.

**Columbus, Miss.**—Bids received for paving Winona road with macadam, Owen Construction Co., Brooksville, Miss., at \$70,000.

**Fulton, Mo.**—\*C. T. Petry, Marshall, Mo., for paving 1,956 sq. yds. bituminous macadam, 1,567 ft. curb and 350 cu. yds. excavation.

**Hannibal, Mo.**—\*George W. Camery, for paving Union St., at 96½ cts. per sq. yd. for paving and 27½ cts. lin. ft. for curbing.

**Joplin, Mo.**—\*H. Kost for paving 20th St. from Main St. west to Annie Baxter Ave., with 3-in. vertical fiber brick at \$10,773.

**Butte, Mont.**—\*Peter Oren, for grading, sidewalks and other improvements in district No. 207, at \$10,675.50, and in district No. 210 at \$5,548.58.

**Bayonne, N. J.**—Bids received for paving 16,000 sq. yds. granite block on a 6-in. foundation, as follows: J. E. Donovan, Port Richmond, S. I., at \$64,125; C. T. Kavanaugh, Bayonne, at \$61,306; Calligan & Machanska, Bayonne, at \$60,663. Twenty-second St. improvement. Bids received for paving 9,000 sq. yds., asphalt on a 5-in. concrete foundation as follows: J. T. Shanly Co., Newark, N. J., at \$26,029.50; W. T. S. Crichfield, Hoboken, N. J., at \$25,190.50; Uvalde Asphalt Paving Co., New York, at \$25,680. Twenty-ninth St. improvement.

**Lakewood, N. J.**—Bids received for paving 12,575 sq. yds. concrete on a 7-

in concrete foundation: J. C. Bentley, Elizabeth, N. J., at \$28,727.53.

**Perth Amboy, N. J.**—Meagher & Smith for grading, flagging and sodding about new municipal electric plant at \$1,995.

**Roselle Park, N. J.**—Camillo & Co., for construction concrete sidewalks on Sheridan Ave., Locust St. and Warren Ave., at \$819.

**Albany, N. Y.**—Proposals were received by the State Highway Commission at its office, No. 55 Lancaster St., Albany, N. Y., on Wednesday, the 12th day of July, 1916, for the construction of public highways by State aid: Road No. 1372, Osborn Center-Schenectady County line, Albany Co., 3.23 mi.; S. B. Van Wageningen, Inc., Rondout, N. Y., \$48,938.75; Lane Const. Corp., Meriden, Conn., \$49,831.25; Albany Const. Co., Albany, N. Y., \$53,449. Road No. 1404, Gormansville-South Westerlo, Albany County, 5.62 miles; Lane Const. Corp., Meriden, Conn., \$65,594; Albany Const. Co., Albany, N. Y., \$69,512.50. Road No. 5608, Machias-Delevan, for Las Cattaraugus Co., 2.17 miles; Frank L. Cohen, Buffalo, N. Y., \$32,522. Road No. 5609, Port Byron-Weedsport, Cayuga County, 3.89 miles; Charles O. McComb, Syracuse, N. Y., \$49,578.50; John R. Buchill, Syracuse, N. Y., \$52,297. Road No. 1379, Jamestown City, Foote Ave., Chautauqua Co., 0.74 mile; George L. Mallick, Jamestown, N. Y., \$37,721.50. Road No. 1395, East Guilford-Rockdale, Chenango Co., 2.91 miles; Alfred H. Flynn, Albany, N. Y., \$30,248; Newport Const. Co., Herkimer, N. Y., \$30,270; L. S. Arbogast, Stroudsburg, Pa., \$30,065 (low). Road No. 1411, Wadhams Mills-Whallonsburg, Essex County, 4.95 miles; No bids received: Road No. 621, St. Johnsville-Oppenheim, Pt. 2, Fulton County, 2.60 miles; L. L. Snell, Canajoharie, N. Y., \$32,267. Road No. 1275, Johnstown City: East Ave., Fulton County, 1.10 miles; Brady-Oltarsh Const. Co., New York City, \$13,977.01; The Lane Const. Corp., Meriden, Conn., \$14,012; John P. Dugan Co., Inc., Amsterdam, N. Y., \$14,051.90; Albert N. Banner, Gloversville, N. Y., \$14,431.50. Road No. 1402, Alabama-Batavia, Pt. 2, Genesee County, 7.60 miles; Cold Springs Const. Co., Buffalo, N. Y., \$75,837; Lewis H. Brotsch, Rochester, N. Y., \$76,000; Frank J. Foote, Nunda, N. Y., \$79,151; Barker & Varney, Batavia, N. Y., \$79,690. Road No. 1361, Oneida Lake-South Bay and Oneida-South Bay, Pt. 2, Madison County, 5.65 miles; John R. Burchill, Syracuse, N. Y., \$54,922.95. Road No. 1391, Sweden-Walker, Monroe County, 7.93 miles; Wm. H. Madden, Rochester, N. Y., \$66,373; Newport Const. Co., Herkimer, N. Y., \$70,056; F. H. Rhodey, Albion, N. Y., \$71,088; Road No. 1343, Westbury-Hicks-ville, Nassau County, 3.09 miles; Rush Const. Co., New York City, \$34,192.50; Helling Brothers, Lindenhurst, L. I., \$34,900.50; E. T. Eggleston, Yonkers, N. Y., \$36,449; Gifford Const. Co., Jamaica, N. Y., \$35,852.50. Road No. 1356, North Western-Boonville, Pt. 2, Oneida Co., 5.74 miles; Albany Const. Co., Albany, N. Y., \$69,732. Road No. 5408, Fulton City: East First St., Oswego Co., 0.35 mile; Pathfinder Const. Co., Fulton, N. Y., \$17,663; Samuel Bonn, Syracuse, N. Y., \$18,869.45. Road No. 1387, Canton Village: West Main St., St. Lawrence Co., 0.44 mile; Arthur F. McConville, Ogdensburg, N. Y., \$5,647.90; Rock & Griffin Co., Watertown, N. Y., \$5,908.05. Road No. 1389, Gouverneur-Edwards, Part 2, St. Lawrence Co., 4.60 miles; No proposals received. Road No. 5611, Cohocton-Naples, Pt. 1, Steuben County, 5.76 miles; Steuben Const. Co., Hornell, N. Y., \$53,242.20; Atlanta Const. Co., Atlanta, N. Y., \$54,272; Dale Eng. Co., Utica, N. Y., \$59,092.10; Frank J. Foote, Nunda, N. Y., \$59,711.50. Road No. 1407, Newark-Sodus, Pt. 1, Wayne County, 3.97 miles; Dana W. Robbins, Inc., New York City, \$31,350; Wm. J. Swartz, Newark, N. Y., \$31,510.75; Chambers & Barnes, Rochester, N. Y., \$33,440; Semper Bros., Watertown, N. Y., \$34,174.90. Road No. 1058, Wolcott-Savannah, Pt. 3, Wayne Co., 2.25 miles; Steppen Const. Co., Hornell, N. Y., \$14,960.10; Hendrickson-McCabe Const. Co., Syracuse, N. Y., \$16,188.30; unsigned, \$16,837.80; Dana W. Robbins, Inc., New York City, \$19,799.50. Proposals were also received by the State Highway Commission at its office, No. 55 Lancaster St., Albany, N. Y., on Wednesday, the 12th day of July, 1916, for the repair of the following: Repair Con. 986, Dutchess County, 1.19 mile; No proposals received. Repair Con. 969, Erie County, 2.48 miles; Frank L. Cohen, Buffalo, N. Y., \$26,595; Carlisle O. Landel, Tonawanda, N. Y., \$29,654.50. Repair Con. 987, Monroe County, 0.79 mile; Whit-

more-Rauber-Vicinius, Inc., Rochester, N. Y., \$25,897.50; Roco Co., Inc., Rochester, N. Y., \$26,432; Peter F. Connolly Co., Horseheads, N. Y., \$26,768.50. Repair Con. 988, Westchester County, — miles; Samuel Beskin, Beacon, N. Y., \$55,059.80; Harper & Higginson, Inc., Newburgh, N. Y., \$56,671.80; H. B. Sproul Const. Co., Inc., Peekskill, N. Y., \$62,144. Sealed proposals were received by the State Commission of Highways at its office, No. 55 Lancaster St., Albany, N. Y., for construction of public highways by State aid, on Friday, the 14th day of July, 1916: Road No. 1405, Thompsons Lake-Van Aiken Corner, Albany Co., 2.93 miles; C. S. Mathusa, Albany, N. Y., \$35,875.25; Albany Const. Co., Albany, N. Y., \$36,182.75; D. I. Snell & Co., Canajoharie, N. Y., \$38,283.75; The Lane Const. Corp., Meriden, Conn., \$40,222.50. Road No. 1380, Jamestown-Ashville, Chautauqua County, 5.65 miles; Fulton Eng. Co., Inc., Walton, N. Y., \$123,126.30; Geo. L. Maltby, Jamestown, N. Y., \$133,808.50; J. A. Hughes & Co., Jamestown, N. Y., \$134,096.10. Road No. 1381, Fredonia-South Dayton, Pt. 3, Chautauqua Co., 3.90 miles; No proposals received. Road No. 1156, Oxford Village, Chenango County, 0.82 mile; A. B. Haight, Oxford, N. Y., \$15,414.25; Frank A. Bushley, Norwich, N. Y., \$16,587.25; Nash & Griffin, Norwich, N. Y., \$16,945.60; Newport Const. Co., Herkimer, N. Y., \$18,536.50. Road No. 1376, Bull Run-Bleeker, Fulton County, 2.80 miles; Eastover Const. Co., Inc., Utica, N. Y., \$45,834.10. Road No. 1377, Gloversville-West Perth, Fulton County, 3.74 miles; Eastover Const. Co., Utica, N. Y., \$40,608.90. Road No. 1403, Alabama-Batavia, Pt. 1, Genesee County, 7.94 miles; Michael F. Ripton, Rochester, N. Y., \$90,091.50; Cold Spring Const. Co., Buffalo, N. Y., \$91,801; L. H. Brotsch, Rochester, N. Y., \$92,861; Frank J. Foote, Nunda, N. Y., \$94,765. Road No. 1363, Paines Hollow-Stone House, Herkimer Co., 5.67 miles; Albany Const. Co., Albany, N. Y., \$56,909.25; Newport Const. Co., Herkimer, N. Y., \$68,363. Road No. 1374, Oneida City-William St., Madison Co., 0.91 mile; Jos. Walker Const. Co., Albany, N. Y., \$11,651; Fort Schuyler Const. Co., Inc., Utica, N. Y., \$12,258; H. A. Schaupp, Guilfordland, N. Y., \$12,358.10. Road No. 1392, Rush-Mendon, Part 1, Monroe County, 3.69 miles; Chambers & Barnes, Rochester, N. Y., \$38,844. Road No. 1393, Scottsville-Rush, Monroe County, 5.27 miles; L. H. Brotsch, Rochester, N. Y., \$62,500; Frank J. Foote, Nunda, N. Y., \$63,984. Road No. 1344, Green Corner-Francis Pond, Nassau County, 3.38 miles; No proposals received. Road No. 773, Weldville-Lockport, Pt. 2, Niagara County, 2.38 miles; No proposals received. Road No. 1364, Syracuse-Otisco, Part 1, Oswego County, 5.55 miles; Warren-Quinlan Asphalt Co., Syracuse, N. Y., \$65,602.50; Frank Malone, Syracuse, N. Y., \$66,748.50; Mondo Const. Co., Inc., Syracuse, N. Y., \$67,680; Guy E. Dickison, Syracuse, N. Y., \$68,745.25. Road No. 1413, Hastings-Parish, Onondaga County, 2.04 miles; Edwin Styling, Theresa, N. Y., \$23,165.25; Spellman-Oliver Co., Chautauqua, N. Y., \$24,269.75; Samuel Bonn, Syracuse, N. Y., \$24,286.90; Lane Const. Corp., Meriden, Conn., \$28,277.50. Road No. 1409, Richfield Springs-Winfield, Pt. 1 & 2, Otsego Co., 8.78 miles; J. L. Richmond, Tinkley, N. Y., \$124,673; Albany Const. Co., Albany, N. Y., \$131,903; The Lane Const. Corp., Meriden, Conn., \$132,445. Road No. 1388, De Peyster-Ogdensburg, St. Lawrence Co., 11.16 miles; Spellman-Oliver Const. Co., Chateaugay, N. Y., \$99,239; Arthur F. McConville, Ogdensburg, N. Y., \$106,940.06; J. L. Richmond, Hinkley, N. Y., \$109,123; Patrick J. Kennedy, Utica, N. Y., \$109,197.50. Road No. 5612, Waddington-Massena, Pt. 1, St. Lawrence Co., 9.12 miles; Mecca Const. Co., Inc., Morristown, N. Y., \$144,783.78. Road No. 1373, Hurley-Kingston, Ulster County, 2.73 miles; Philip Kramer, Paterson, N. J., \$39,651.20; Fallkill Const. Co., Poughkeepsie, N. Y., \$39,796.25; Harper & Higginson, Inc., Newburgh, N. Y., \$41,415.75. Road No. 1059, Clyde-Resort, Part 3, Wayne County, 1.88 mile; Chalmers & Barnes, Rochester, N. Y., \$15,128; Hendrickson-McCabe Const. Co., Syracuse, N. Y., \$15,707.50. Road No. 1060, Lyons-Sodus Point, Parts 2 & 3, Wayne Co., 6.41 miles; Thos. Grady, Rochester, N. Y., \$56,987.50; Frank J. Foote, Nunda, N. Y., \$60,477.50; Frank Malone, Syracuse, N. Y., \$60,825; Lane Const. Corp., Meriden, Conn., \$62,096.50. Road No. 5606, Tuckahoe-White Plains, Pt. 2, Westchester Co., 2.74 miles; No proposals received. Proposals were received by the State Highway Commission at its office, No. 55 Lancaster St.,

Albany, N. Y., for the repair of public highways by State aid, on Friday, the 14th day of July, 1916: Repair Contract No. 991, Cattaraugus County, 8.83 miles; P. H. Murray, Rochester, N. Y., \$29,657.55; McGreevey, McGuigan & Baum, Elmira, N. Y., \$30,025.55; Flood & Van Wirt, Hudson Falls, N. Y., \$31,379.30. Repair Contract No. 941, Delaware County, 5.77 miles; No proposals received. Repair Contract No. 989, Erie County, 3.55 miles; Thos. J. Murray, Leroy, N. Y., \$23,559.50; Flood & Van Wirt, Hudson Falls, N. Y., \$25,315. Repair Contract No. 937, Nassau County, 1.27 mile; No proposals received.

**Auburn, N. Y.**—Bids received for construction of Montezuma-Port Byron State road, 4.39 miles in length, as follows: Sullivan Construction Co., Syracuse at \$66,365; Guy R. Dickison, Syracuse, at \$74,630.35.

**Oneida, N. Y.**—Bids received for paving 5,070 sq. yds. bitulithic or brick on a 5-in. concrete base, as follows: R. F. Rely, Oswego, N. Y., brick, at \$17,674.21, bitulithic, at \$19,075.21; Warren Bros. Co., Boston, Mass., bitulithic, at \$16,345.95; Fort Schuyler Construction Co., Utica, N. Y., brick or bitulithic, at \$17,857. Bids include cost of 1,190 lin. ft. of 10-in. storm sewer with 13 inlet grates and frames. J. M. Hutton, City Engr.

**Oneonta, N. Y.**—Bids received for construction Three-Mile Point-Springfield Center-Warren Rd. as follows: D. I. Snell & Co., Canajoharie, \$88,569.25; J. L. Richmond, Hinkley, \$99,366.50; Albany Construction Co., Albany, \$94,763.50; Newport Construction Co., Herkimer, \$101,372. Total length of road, 8.13 miles.

**Rensselaer, N. Y.**—M. F. Dollard, Albany, for improvement of Creek St., at \$2,413.50; other bid: J. J. Rigney at \$2,454.75.

**Rome, N. Y.**—Bid received for paving Ridge St. with bitulithic, Warren Bros., at \$11,250.50.

**Schenectady, N. Y.**—Callanan Road Improvement Co., South Bethlehem, N. Y., for 250 tons of crushed limestone for macadam road dressing at \$1.12 a ton.

**Yonkers, N. Y.**—Warren Brothers, for paving North Broadway from Ashburton Ave. to No. 919 at \$106,334.08, with bitulithic paving on old macadam base.

**Elyria, Ohio.**—George Rhoades for paving William St., at \$5,876. \*The Elyria Construction Co., for paving Taylor St., at \$1,192, and a section and intersections on Winkles, Taylor and Olive Sts., at \$10,710. Worcester brick is to be used.

**Marietta, O.**—Bids received for paving as follows: For alley between Front and 2nd, \*Foreman & Putnam, \$6,242.23; Cislser & Morse, \$6,490.89. For alley between 2d and 3d, \*Foreman & Putnam, \$4,454.58; Cislser & Morse, \$4,506.80. For alley between 4th and 5th, \*Foreman & Putnam, \$4,063.62; Cislser & Morse, \$4,125.66.

**North Bend, Ore.**—Bids received for paving 13,487 sq. yds. bituminous rock, 6-in. concrete foundation. \*Anderson, Klockars & Co., local, at \$43,007; Moon & Gidley, Marshfield, Ore., at \$45,416. Curb and plank sidewalks included.

**Erie, Pa.**—Bids received for grading French St., between 26th and 29th Sts., as follows: L. V. Metz, 28 cts. per cu. yd.; C. E. Flynn Co., 31 cts. per cu. yd.; J. G. Diefendorf, 32 cts. per cu. yd.; Willis Bancroft, 32 cts. per cu. yd.; 4,000 yds. are to be removed.

**Hazleton, Pa.**—Bids received for paving 16,000 sq. yds. with Hassam Bi-Co-Mac, 6-inch concrete foundation as follows: Hassam Paving Co., Worcester, Mass., at \$1.85 per sq. yd.

**Jersey Shore, Pa.**—R. M. Shaw, for constructing all borough sidewalks, at 12 cts. per ft.

**Kittanning, Pa.**—A. P. McInowan for sidewalk at the approach of east end Kittanning bridge at 12½ cents per cu. yard.

**South Bethlehem, Pa.**—Philip Urallo for concrete curbing on Buttonwood St. at 72 cents per lin. ft., also concrete gutters on Oak St. at 66 cents per lin. ft.

**South Bethlehem, Pa.**—An estimate from the Standard Bitulithic Co. for repair of paved streets as follows: Bitulithic two-inch base, \$1.75 per sq. yd.; reskin patching \$1.25 per sq. yd.; for reskin coating 10 cents per sq. yd. In the event that council decides to resurface entirely or to do not less than 10,000 sq. yds. of this work they quoted a price of \$1.10 per sq. yd. This would include preparation of present pavement and addition of from one and one-half inches of bitulithic.

**Wilkes-Barre, Pa.**—Warner-Quinlan Co., for city paving, \$2.10 per sq. yd. un-



der 10-year bond, \$1.95 per sq. yd. under 5-year bond.

**Cumberland, R. I.**—Robert McDonald & Son for constructing granolithic sidewalks at \$1.75 per yd.

**Providence, R. I.**—Bids received for paving 6,480 sq. yds. with Amiesite, 5 in. crushed stone foundation, Connecticut & Rhode Island Company, Inc., Meriden, Conn., at \$12,312.

**Erwin, Tenn.**—Bids received for paving: Murray Construction Co., Knoxville, at \$1.48 per sq. yd.

**El Paso, Tex.**—Southwestern Paving Co., for paving Wheeling St. between Elm and Louisiana Ave., at \$3,500.

**Galveston, Tex.**—Cleveland Trinidad Paving Co., Cleveland, O., for paving new West End section with asphalt at approximately \$57,000.

**Galveston, Tex.**—C. H. Lawson, for cement sidewalk, curbing, etc., on the boulevard from 37th to 39th Sts., at \$873.40.

## SEWERAGE

**Stockton, Cal.**—Storm sewers are to be installed on Edison, Harrison, Lincoln, Jefferson, Jackson, South Sts. and the French Camp Turnpike. City Engineer Compton's estimate is \$5,749.38.

**Woodland, Cal.**—Sewer and Water bonds amounting to \$61,000 have been purchased by E. H. Rollins & Sons, of San Francisco.

**Bridgeport, Conn.**—Plans and specifications for an electrically operated sewage pumping station are being prepared by Hering & Gregory Consulting engineers, 170 Broadway, N. Y.

**Seal Beach, Colo.**—Plans are being drawn for a complete sewerage and drainage system, for which bonds will be issued to cover cost of construction.

**Washington, D. C.**—The Council have authorized construction of a sewer on Flower Ave., northward from Carroll Ave., adjoining Washington Sanitarium grounds. It will be an 8-in. terra cotta line, 600 ft. long. The mayor will receive bids at an early date.

**Springfield, Ill.**—The laying of a 12-inch vitrified crock pipe sewer in Moffatt Ave., from 15th St. to East Grand Ave., at an estimated cost of \$1,208.93 is under consideration.

**Springfield, Ill.**—A sewer is to be constructed beginning near Clear Lake Ave. and extending to Eastland Ave., at an estimated cost of \$4,105. Approximately three-quarters of a mile long and is divided into three sizes, as follows: 1,970 lin. ft., 2 feet in diameter; 1,420 lin. ft., 18 inches in diameter; 500 lineal feet, 1 foot in diameter.

**Evansville, Ind.**—A sewer is to be constructed in alley between Columbia St. and Delaware St., 440 feet of 12 inch pipe and one manhole.

**Evansville, Ind.**—Sewers are to be constructed in several streets.

**Kokomo, Ind.**—July 29, 1916, at 10 a. m., by Treasurer of Howard County, for sale, \$17,199 ditch bonds, 5 per cent, ten years. Ora J. Davies, Treasurer.

**Logansport, Ind.**—A sanitary sewer is to be constructed beginning at the intersection of 17th St. and Douglas St., to extend west in Douglas St. to its intersection with 15th St.; hence south in 15th St. and terminating in the manhole at intersection of 15th St. and Miles St.

**Salem, Ind.**—Sewerage will soon be installed.

**Bismarck, No. Dak.**—Plans and specifications and estimates of cost in the total sum of \$55,353 for the construction of a storm water sewer system on following named streets have been filed: Broadway, from Mandan Ave. to 3d St., and from 7th St. to 13th St.; Rosser St. from Mandan Ave. to 3d St., and from 7th St. to 9th St.; Ave. B from 6th St. to 7th St.; 3d St. from Broadway to Rosser St.; 4th St. from Broadway to Thayer St.; 5th St. from Broadway to Thayer St.; 6th St. from Broadway to Thayer St. and from Ave. B to Ave. C; 7th St. from Rosser St. to Ave. B; 8th St. from Bowen St. to Rosser St.; 9th St. from Rosser St. to Ave. C.

**Shreveport, La.**—All bids for construction of 40 miles of sewers in West and South Shreveport at an estimated cost of \$105,000 have been rejected and will be re-advertised.

**Marquette, Mich.**—An 8-in. tile sewer with Y's is to be constructed in Fair Ave. at an estimated cost of \$639.07.

**Marinette, Mich.**—A sewer to cost between \$10,000 and \$15,000 will be laid on Marinette Ave. from Minnesota St. to the city limits.

**Pontiac, Mich.**—Lateral sewers are to



Patrick Henry Addressing the First Continental Congress, Philadelphia, 1774

## One Nation; One People

WHEN Patrick Henry declared that oppression had effaced the boundaries of the several colonies, he voiced the spirit of the First Continental Congress.

In the crisis, the colonies were willing to unite for their common safety, but at that time the people could not immediately act as a whole, because it took so long for news to travel from colony to colony.

The early handicaps of distance and delay were greatly reduced and direct communication was established between communities with the coming of the railroads and the telegraph. They connected places. The telephone connects persons irrespective of place. The telephone system has provided the means of individual communication which

brings into one national family, so to speak, the whole people.

Country wide in its scope, the Bell System carries the spoken word from person to person anywhere, annihilating both time and distance.

The people have become so absolutely unified by means of the facilities for transportation and communication that in any crisis they can decide as a united people and act simultaneously, wherever the location of the seat of government.

In the early days, the capital was moved from place to place, because of sectional rivalry, but today Independence Hall is a symbol of union, revered alike in Philadelphia and the most distant American city.

## AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ASSOCIATED COMPANIES

One Policy

One System

Universal Service

be constructed in Cannon St. from Forrest St. along P. O. & N. R. R. to Cannon, and in Cannon to Baldwin, at a cost of \$2,178; and in Prospect St. from Sanford St. to Going St. at a cost of \$812.

**Red Wing, Minn.**—A sewer is to be constructed in Norwood St. from Phelps St. northeast a distance of 140 feet at a cost of \$336.

**Bayonne, N. J.**—Commission are considering the advisability of laying sewers in North St. and Humphreys Place.

**Camden, N. J.**—An ordinance has been passed providing for construction of sewers, culverts or drains in and along Cope St. and Miller St.

**Binghamton, N. Y.**—A sewer is to be constructed in Emma St.

**Newburgh, N. Y.**—Sewers have been laid in Washington St. between Robinson Ave. and Lake St., and in Clark

St. from a point about opposite the Atlas Roofing Co. works to Renwick St.

**Syracuse, N. Y.**—An ordinance declaring intention to order sanitary sewer in a portion of Teall Ave. and other streets has been passed, also the reconstruction of sewer in West Division St., cost not to exceed \$2,100.

**Watertown, N. Y.**—A sanitary sewer is to be constructed in Hawk St. from Coffeen to Newell St. Sealed bids for sewer extension in East Hoard St. will be received July 21.

**Bismarck, N. Dak.**—A \$55,000 storm sewer system is to be installed in the eastern part of the city as follows: Broadway from Mandan Ave. to Third St. and from Seventh St. to Thirteenth St.; Rosser St. from Seventh to Ninth St.; on Avenue B from Sixth to Seventh Sts.; Third St. from Broadway to

Rosser Sts.; Fourth St. from Broadway to Thayer Sts.; Fifth St. from Broadway to Thayer Sts.; Sixth St. from Broadway to Thayer Sts.; and from Avenue B to Avenue C; Seventh St. from Rosser St. to Avenue B; Eighth St. from Rosser St. to Rosser St.; Ninth St. from Rosser St. to Avenue C.

**Garison, N. D.**—See "Water Supply."

**Cincinnati, O.**—A sewer is to be constructed in Innes Ave. from Frederick Ave. to Otte Ave.; in Philomena Ave. from Innes Ave. to Anthony St., and in Anthony St. from Philomena Ave. to Otte Ave.

**Coshocton, O.**—The sewer system is to be improved by the construction of several new sewers.

**Hamilton, Ohio.**—The 15-in. sewer on Summer Ave. is not large enough; surveys are being made to determine necessary size of pipe.

**Lorain, O.**—A lateral sanitary sewer will be constructed in Waverly Place.

**Salem, O.**—A bond issue of \$20,000 for repairs of sewage disposal plant has been authorized.

**Toledo, O.**—Sealed bids will be received up to 11.30 a. m., August 1, for sanitary sewer bonds amounting to \$155,141.82. Gabe Cooper, Auditor.

**Youngstown, O.**—See "Streets and Roads."

**Chester, Pa.**—Clifton Heights, Oakview and Upper Darby are to unite interest in obtaining a sewage disposal plant.

**Erie, Pa.**—Council will advertise for bids on construction of storm sewer in 30th St. from Garrison run east to Brandes St.

**Erie, Pa.**—Ordinance has been passed providing for construction of 9-in. sanitary sewer in Reed St. from 19th to 20th St., and west in 20th St. 240 ft.

**Williamsport, Pa.**—The issuance of bonds amounting to \$18,000 for sewer is under consideration.

**Williamsport, Pa.**—Sewers are to be constructed in five streets at a cost of \$2,431.

**Evansville, Wis.**—A sanitary sewer in Second St. between Church and Liberty St., has been recommended and committee has been instructed to prepare plans and specifications.

**Sheboygan, Wis.**—The Board of Public Works have recommended a 48-in. sewer be laid along right-of-way of C. & N. W. from Alabama to Georgia, and a 36-in. sewer from Georgia to Union.

#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates contracts awarded.)

**Douglas, Ariz.**—Bids received for construction of approximately 1,300 feet of 6-inch sewer in Clawson addition, \*M. F. Dicus Co., at \$1,096.50; other bidders: Douglas Plumbing & Tinning Co., at \$1,140; Charles T. Frances & S. T. Clark, at \$1,139.

**Tucson, Ariz.**—T. J. Shea was the lowest bidder on the new outfall sewer and the north side sewer system.

**Ybor City, Fla.**—Contracts for the construction of a storm sewer in Ybor City was let in three sections: \*P. J. Stamm & Son, on Fifth Ave., at \$3,992.25; \*Mabry & Owens, Fifteenth St., at \$10,711, and also on Thirteenth Ave., at \$2,216.25. E. W. Parker was low bidder on Westland Ave. and Gray St., at \$9,863.90.

**Brazil, Ind.**—The new Houk sanitary sewer calls for 3,240 feet of eight inch sewers, 720 feet of 12 inch sewers; six manholes, four trapped catch basins and seven lamp holes. The following bids were received: \*William H. Rupert, 8 inch sewer, 46 cents per foot, 12 inch sewer, 65 cents per foot, manholes \$23.00, catch basins \$27.00, lamp holes, \$7.00, 12-in. pipe for catch basins, 50 cents; Regan Brothers, 8 inch sewer, 48.1 cents per foot, 12 inch sewer, 68 cents per foot, manholes, \$24.00, catch basins \$28.00, lamp holes, \$7.00, 12-in. pipe to catch basins, 50 cents; Campbell & Hawkins, 8 inch sewer, 48 cents per foot, 12 inch sewer, 65 cents per foot, manholes \$22.50, catch basins \$27.00, lamp holes \$7.00, 12-in. pipe to catch basins, 50 cents.

**Muncie, Ind.**—\*Cornelius Delaney for construction of a local sewer in Alley north of Second St., at \$799.

**Shelbyville, Ind.**—\*Dobbins & Patrick, for constructing storm sewer in Montgomery St., at \$1,385.90.

**Oskaloosa, Ia.**—\*Kansas Paving and Construction Co., Kansas City, Mo., for north district sewer improvements, at \$18,964.34; other bidders: W. S. Jackson, Cedar Rapids, at \$20,070.05; Public Service Construction Co., Omaha, Neb., at \$20,343.80; R. C. DeLa Hunt, Cedar Rapids, at \$20,998.65; L. Harness, Ottum-

wa, at \$21,815.29. The bid of the Kansas Paving & Construction Co. in detail is given below: Main Sewer—765 ft. 12-in. D. S. Vit. Sewer at 75c ft., \$574.75; 4,593 ft. 15-in. D. S. Vit. Sewer at 93c foot, \$4,271.49; 72 ft. 12-in. C. I. P. Sewer, \$2.50 per foot, \$180.00; 96 ft. 14-in. C. I. P. Sewer, \$3.00 per foot, \$288.00; 14 manholes at \$42.00 each, \$588.00; 1 drop manhole, \$50.00; 1 diversion manhole, \$220.00; 81 cu. yds. concrete abutts and piers at \$13.00 per cu. yd., \$1,053.00; 21 cu. yds. concrete for pipe enclosures at \$10.00 per cu. yd., \$210.00; 1,060 cu. yds. embankment at 50c per cu. yd., \$530.00; 155 cu. yds. exc. for creek changes, at 50c per cu. yd., \$77.50. Disposal Work—280 yds. exc. for Imhoff tank at 75c per yard, \$210.00; 65 yds. concrete for Imhoff tank at \$35.00 per yard, \$2,275.00; 706 yards exc. for contact filters at 50c per yard, \$353.00; 150 yards concrete walls for contact filters at \$13.00 per yd., \$1,950.00; 55 yds. concrete floors for contact filters at \$10.00 per yd., \$550.00; 875 yards filtering material at \$3.00 per yard, \$2,625.00; 525 feet 12-in. S. P. drains at 30c per ft., \$157.50; 60 feet 10-in. vitrified pipe at 30c per foot, \$18.00; 216 feet 8-in. vitrified pipe at 35c per foot, \$75.00; 45 feet 6-in. vitrified pipe at 20c per foot, \$9.00; 1 automatic equipment, \$1,500.00; 1 housing, \$580.00; 120 yards exc. for sludge filter at 65c per yard, \$78.00; 1,895 yards concrete lining filter at 25c per yard, \$284.25; 30 yards filtering material at \$3.00 per yard, \$90.00; 350 dist. troughs, \$25.00; 25 feet 8-in. vitrified sewer at 40c per foot, \$10.00; 45 feet 6-in. vitrified sewer at 20c per foot, \$9.00; 1 foot 8-in. H. E. G. V. and box, \$30.00; 30 feet 15-in. sewers at D. Wks., at \$1.00 per foot, \$30.00; 15 feet 12-in. sewers at D. Wks., at 75c per foot, \$11.25; 102 ft. 8-in. sewers at D. Wks. at 50c per foot, \$51.00. Total, \$18,964.34.

**Pontiac, Mich.**—\*Samuel McLain, for construction of sewer in Chandler Ave. from Mariva Ave. to Jessie St., at \$332.

**Butte, Mont.**—\*Peter Staneos, for construction of sewer in Girard Ave., at \$5.95 per lin. ft., distance 102 ft.

**Perth Amboy, N. J.**—\*Rohr & Poulsen for constructing sewer in Harrington St. between Cleveland and Donald Aves., at \$1.83 a lin. ft. for 12-in. sewer, and \$38 each manhole.

**Binghamton, N. Y.**—Bids received on construction of two sewers as follows: Walnut St.—C. W. Rose, \$560; \*George Serifina, \$509.15. Brook and Corbett Ave.—C. W. Rose, \$1,297; George Serifina, \$1,350.10.

**Niagara Falls, N. Y.**—\*Dominick Spacone, for constructing a sewer in Elmwood Ave. from 17th to 19th Sts., at \$905. Other bidders: Nick Nolfe, \$1,365; Rinaldo Reynolds, \$1,024; Reach & Ryan, \$1,001.20. Engineer's estimate, \$1,032.

**Onelda, N. Y.**—See "Streets & Roads."

**Schenectady, N. Y.**—\*Builders' Iron Foundry, Providence, R. I., for a Venturi sewerage meter for pumping station, at \$1,500.

**Marietta, O.**—\*Foreman & Putnam for constructing a sanitary sewer on Har-mar St., from Putnam Ave. to a point 75 feet south of Lancaster St., at \$652.90.

**Tiffin, Ohio.**—Bids received on construction lateral sewer in St. Clair St.: Martin Schauder, at \$441.20, without rock excavation.

**South Bethlehem, Pa.**—\*S. L. Cyphers, for construction 6 inch sewer laterals on Buttonwood St., at 59 cents per foot, also construction sewer in Locust St., at \$248.40; Hillside Ave. at \$368; and Birch St. at \$159. \*Philip Uralls for construction of sewer in Oak St., at \$463.60 and Centre St., at \$531.16.

**Williamsport, Pa.**—\*Joseph McCadden, for construction sewer in High St., at \$2,749.03; Arch St. storm water sewer, at \$847.50.

**Nashville, Tenn.**—\*Lewis Bros. Co. for construction of sewer in 22nd Ave. at \$551.15 also a 30-inch circular brick trunk sewer in 8th Ave., at \$1,109.35.

#### WATER SUPPLY

**Berkeley, Cal.**—Chamber of Commerce will meet with the city council for the purpose of considering a plan for installing a fire protection water system in the manufacturing district.

**Washington, D. C.**—The Council have approved the specifications for water tower and pumping engine to be installed soon. Bids soon will be opened for furnishing and erecting a steel water tank and tower and an internal combustion oil engine to replace the present gasoline engine in the pumping plant. At the same time, bids will also be received for lowering the present tank to level of proposed tank. The

new tank is to have a capacity of 50,000 gals. of water, while alternate bids will be received for one of 100,000 gals. capacity.

**Evansville, Ind.**—It is proposed to add a separate clear storage reservoir at the site of the present plant, with a capacity of 4,000,000 gallons in addition to the present reservoir of 3,200,000 gallons, at a cost of \$90,530.

**La Porte, Ind.**—Engineer's estimate on cost of erecting the pump house at the water works station is \$450.

**Aukeny, Ia.**—Bonds amounting to \$12,000 for water works will be issued.

**Jewell, Ia.**—Bonds amounting to \$5,000 are to be issued for waterworks extension.

**Waterloo, Ia.**—To provide better water service and fire protection, a total of 13,000 feet of pipe will be laid as follows: 12-in. mains—Parker, from 4th to the Illinois Central tracks, west of Broadway; Mullan Ave., from Lafayette to Franklin; Franklin, from Mullan to Utica; Park road, from Utica to Columbia; Columbia, from Park road to Parker; Sycamore, from 4th to 7th, supplanting a 6-in. main; Lane, from Fowler to Independence Ave. 10-in. main—Elm, from Cortlandt to Franklin. On Park Ave. east, 220 feet of 8-in. main will be supplanted by 16-in. main.

**Lawrence, Kan.**—Bids received on the water works bonds were below par and were rejected. Commission will advertise for new bids.

**Mineral, Kan.**—Water main extensions to the proposed site of the new school building totaling more than 250 ft. have been authorized by the Council. Waterworks Supt. L. T. Black was instructed to purchase the necessary 4-in. pipe at once, also such other material as may be needed for the work.

**Topeka, Kan.**—City engineer has presented plans for a reinforced concrete reservoir with a capacity of 250,000 gals. to the commissioners. As soon as commissioners pass on plans bids will be advertised for.

**Lockport, La.**—A new municipal waterworks plant is to be erected.

**Highland Park, Mich.**—Bonds amounting to \$70,700 are to be issued for new water mains and \$374,740 are to be issued for a new reservoir and filtration plant.

**Duluth, Minn.**—City council has ordered a 36-in. water supply in E. 4th St. in place of the proposed inverted siphon and stone bridge over Tischer's Creek.

**Madison, Minn.**—Bonds amounting to \$26,000 will be issued for water works system.

**Wayne, Neb.**—An election will be held July 31 to vote on issuing \$12,000 bonds for extension water works system. J. M. Cherry, City Clerk.

**Bayonne, N. J.**—City commission has received petition for water mains to be laid on the east side of the Boulevard.

**Kenilworth, N. J.**—A water main 145 ft. in length will be laid in Ninth St. from Monroe Ave. north, 320 ft. in Twelfth St. from Monroe Ave. north.

**Perth Amboy, N. J.**—George B. Gibbons & Co. have purchased water bonds amounting to \$100,000.

**Vineland, N. J.**—Commissioners have the extension of water mains under consideration.

**Lumberton, N. C.**—The sum of \$15,000 will be spent in extending the waterworks.

**Garrison, N. D.**—Water works and sewer bonds amounting to \$5,000 are to be issued.

**Hamilton, Ohio.**—Bonds are to be issued to cover expenditures of Gas Dept., Water Dept. and Electric Light Dept.

**Ironton, Ohio.**—State Board has approved of the filtration plant plans and work of erection will proceed.

**New Orleans, O.**—One thousand dollars is to be spent to complete water system in Lafayette Ave.

**Knoxville, Tenn.**—Commissioner J. G. Crumbliss has been authorized to secure estimates on cost of installing a new pump for the water works, one of about 15,000,000-gal. capacity.

**Montreal, P. Q.**—Bids have been asked for the laying of ten miles of 4-in. and 6-in. wood pipe in connection with the Chateauguay waterworks. Further information from A. D. Macdonald 4166 Sherbrooke St. W.

#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\* Indicates Contracts Awarded.)

**Ottawa, Ill.**—\*Frank La Rivu, Oglesby, for completion of water works system, at \$14,076.75.